The RUBBER AGE

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LATE NEWS of the Industry

Tire Business Shows Definite Upward Trend

Factory Production Schedules Sharply Increased As Sales Volume Begins to Reflect Replacement Demand

GENERAL improvement in all phases of the tire business is reported by the leading manufacturers for the beginning of May. A larger and more profitable volume of sales is universally noted, with factory production schedules increasing at a proportionate rate. Goodyear inaugurated a five and a half day week with a daily production of 59,000 casings on May 4, while U. S. has brought its plants all up near full capacity and Goodrich finds sales appreciably above those of last year. Firestone operations have been improving and the company's new South American factory turned out its first tire on April 30, while numerous smaller domestic companies have recorded notable gains in business.

Operations of the B. F. Goodrich Company have been undergoing a favorable increase in response to an improved demand for its products. Following an encouraging upturn in tire shipments during March, sales in April showed a further substantial increase, running ahead of April of last year. For the first quarter, shipments of tires to dealers and distributors also were considerably larger than in the like period of 1930.

Goodrich Reduces Net Loss

Although the gain in unit sales has constituted a highly encouraging performance in view of the depressed levels of general business, in the first quarter the company was handicapped from a profit standpoint by the lower prices prevailing for tires. However, due to the increase in unit sales and to the extensive economies effected in manufacturing and operating costs, the company substantially reduced its net loss for the quarter, after full provision for depreciation and interest charges, from the total of $1,385,000 incurred in the like period of last year. The results of operations for the quarter were substantially better than anticipated by the company at the first of the year.

Goodrich has followed a conservative production schedule, and inventories of finished tires on hand at the present time are understood to be materially lower than at the corresponding period of 1930. With tire sales showing a favorable increase over last year as the company enters the second quarter, a period of normal seasonal expansion in business, a satisfactory improvement in operating results over the first quarter seems likely in the current three months.

U. S. Running Near Capacity

While the United States Rubber Company did not quite earn depreciation charges in the first quarter, according to F. B. Davis, Jr., president, progress is being made with its reorganization program and the company will show profits for 1931 if the same unit volume of sales is achieved as in 1930. Sales in the first quarter, however, were off from last year in line with general business conditions.

The company's tire business with Montgomery Ward & Company is being maintained at profitable levels, Mr. Davis said. The company obtained this business through the acquisition of a controlling interest in the Samson Tire & Rubber Corporation and the Gillette Rubber Company, which were manufacturing the Riverside and other tires for Montgomery Ward. The Gillette factory has been brought up from a three-day week schedule to full capacity, employing three eight-hour shifts daily, for the first time in over a year. The Detroit, Indianapolis and Los Angeles plants are also running at high production schedules.

Seiberling Back to Six-Day Week

The biggest April business in four years at the Seiberling Rubber Company was reflected in increased personnel and longer working weeks. During the month the six-day working week was restored, replacing the five-day week, and the factory force was increased 20 per cent, F. A. Seiberling, president, announced. April business represented a 30 per cent increase over March, and production and sales for the first quarter were substantially better than for the first quarter of last year.

Orders on the new Seiberling "triple-tread" casing have been unusually heavy, and monthly tire production has been set at 120,000 units for the next three months, comparing with approximately 110,000 tires in April. On April 28, Seiberling closed a contract with three major tire dealers from Texas and New Mexico which, it is reported, will add conservatively $750,000 to the expanding business at the Barberton plant. The new business will give Seiberling a substantial foothold in the retail tire field in the Southwest.

Dayton Jumps Output During May

John A. MacMillan, president of the Dayton Rubber Manufacturing Company, stated that his company's factory opened May on an eight-hour, six-day schedule, or at about capacity against 60 per cent last month. "Dealer sales during April showed a substantial improvement, with truck and bus tires reflecting the largest improvement," he stated.

Norwalk Reports Net Profits

The Norwalk Tire & Rubber Company has reported for the six months ended March 31, 1931, a gross income of $33,924 compared with a deficit of $42,554 for the corresponding period of 1930, and net income, after provision for depreciation, interest, discounts, etc., of $2,759 against a deficit for the same period last year of $75,877. While the profit shown is small, it is regarded as an excellent showing in view of the generally depressed business conditions and the losses suffered by other companies.

Cooper Plant Runs Day and Night

A decided improvement in orders at the Findlay plant of the Master Tire & Rubber Company is reported by R. P. Bremer, president. "The Cooper factory is still working day and night, and orders are being steadily received not only from old customers but from new ones as well," he commented. A new puncture proof tube has been developed by the Cooper organization and machinery has been installed at Findlay for its manufacture.

Murray Doubles Tire Production

The Murray Rubber Company, under the receivership of its vice-president and general manager, Alfred H. Branham, has shown important progress since the first of the year. Production has been doubled in that time, and the working force increased by 100 additional men since April 1. Net sales in March amounted to about $108,000, an increase of 20 per cent over February, according to a report made to the federal court. Net profit from March operations was $6,700, as against a loss of about $3,000 in February. April sales were 40 per cent ahead of March.

General at 91 Per Cent of Capacity

The General Tire & Rubber Company was running at 91 per cent of capacity last month, according to W. O'Neil, president, and is showing no let-down thus far in May.

Goodyear on Five and a Half Day Week Jumps Output to 59,000 Tires Daily

INAUGURATION of a five and a half day week in the factory and an increase of production from 53,000 tires a day to 56,500 was announced April 28 by P. W. Litchfield, president of the Goodyear Tire & Rubber Company. This expansion in production, the second to be made since January 1, reflects the fact that Goodyear sales have substantially exceeded estimates, both to dealers and manufacturers. Output was jumped to 59,000 tires May 4.

"Sales for April will exceed those of April, 1930," Mr. Litchfield stated. "We have just completed a survey of tire stocks in the hands of dealers and find them low. Our spring sales have pulled down the company's inventories of tires and it is to build that inventory back to a safe figure that the present production increase was ordered."

Goodyear's low mark for last fall was 33,000 tires per day. On the first of the year production was moved up to 50,000 tires per day, and a month later to 53,000.

No increase of employment is contemplated, it was stated, the company planning instead to give full employment to its men who worked short hours last fall and so enabled as large a number of men as possible to be kept on the job. As additional help is necessary, former employes will be recalled.

Automobile Parts-Accessory Business Has Sharp Increase in March and April

MANUFACTURERS of automotive parts, accessories and service equipment experienced further gains in business during March to continue the upward trend which has been noticeable in this field since the first of the year, according to the Motor and Equipment Association, which includes several rubber manufacturers in its membership. Preliminary April reports indicate further progress.

March usually shows an increase over February in this industry but the rate of increase this year is greater than it was in 1930. March business showed an increase of 21 per cent over February this year as compared with an increase of 12 per cent in 1930. Manufacturers shipping to car manufacturers for original equipment reported a 23 per cent gain between March and February while the gain last year was 18 per cent. This would indicate an increase in April car production

The grand index of shipments for all groups of manufacturer members reporting their figures to the Association for March stood at 113 per cent of the January 1925 base index of 100 as compared with 93 in February, 84 in January and 155 in March, 1930.

Exports of Passenger Car Casings Drop 25 Per Cent in First Quarter

WHILE exports of trucks and bus casings from the United States held up fairly well during the first quarter of 1931, shipments of pneumatic casings for passenger cars declined more than 25 per cent in value as compared to the same period of last year. During the first three months of 1931, such shipments totaled 454,014 casings with a value of $3,414,963, as compared to a first quarter total for 1930 of 532,507 casings, worth $4,618,362. The 1930 figure was itself a sharp drop from the record 1929 total.

Truck and bus casings exported in January, February and March, 1931, numbered 126,766, an increase over the 117,785 shipped in the first quarter of 1930. The 1931 value of $2,618,345 was, however, slightly lower than the $2,724,738 value placed upon the shipments of the first three months of 1930.

Automotive rubber exports in March were the highest for the present year. Shipments of automobile tires, inner tubes, tire sundries and repair materials in that month had a total value of $2,459,755, as compared to the February total of $2,168,070 and the January total of $2,268,967. The chief market for passenger car casings and inner tubes was Denmark, while Argentina, for years the leading export market, was in ninth place. In the month 163,366 pas-

senger car casings were exported with a value of $1,150,931 and 55,516 truck casings, worth $976,387, British India being again the principal customer for the latter.

Rubber boots exported during the month numbered 29,953 pairs with a value of $73,737, and rubber shoe shipments totaled 84,172 pairs with a value of $57,116. The United Kingdom was the chief market for the former and Chile for the latter. Exports of canvas rubber-soled shoes increased to 256,249 pairs with a value of $166,636. The United Kingdom was the best customer for this type of footwear in respect to quantity, while Cuba led in value of shipments.

Shipments of rubber belting in March amounted to 297,712 pounds, worth $138,461, and exports of rubber hose totaled 567,626 pounds with a value of $153,668. The Union of South Africa was the leading customer for rubber belting, while Canada was first in value and the United Kingdom in quantity as buyers of rubber hose.

During March, the United States exported 1,685,110 pounds of reclaimed rubber, valued at $82,133, or 4.87 cents a pound as against an average value of February exports of 4.95 cents a pound, and 4,168,359 pounds of scrap and old rubber, worth $112,261. Canada was, as usual, our best customer for reclaim, while Spain was far ahead of all other markets for rubber scrap.

Raybestos-Manhattan, Inc., Net Profit Figured at $300,000 in First Quarter

PRELIMINARY estimates indicate that net profit of Raybestos-Manhattan, Inc., in the quarter ended March 31 totaled close to $300,000 or more than 40 cents a share on the 676,007 outstanding capital shares. Actual profits in the first two months of 1931 were about $160,000 after all charges, or 23 cents a share, while sales in March increased 20 per cent over February and probably produced profits close to the combined earnings in the two preceding months.

Sales for the quarter totaled $3,504,388 against $4,815,627 in the first three months of last year, a decrease of 27 per cent, while the decline in net profits will be around 33 per cent from the total of $450,975, or 67 cents a share, in the first quarter of 1930. The improved resistance of earnings to declining volume, which is a result of operating economies, is demonstrated by the fact that net profits in the first quarter last year decreased 50 per cent from the like 1929 period, while sales declined only 20 per cent.

So far this year business has been consistently gaining, with February's results showing a gain of 9 per cent over January, and those for March increasing 20 per cent over February. The comparison with 1930 business likewise has improved and March sales fell only 22 per cent under last year, compared with a decline of 29 per cent in the first two months of the year.

Sales by the Raybestos Division have undergone a satisfactory seasonal gain, while business of the Manhattan Rubber Manufacturing Division, which shows little seasonal variation, increased in March in response to an improved demand from the industries purchasing its products.

The company maintained its usual large balance of cash and marketable securities which totaled $3,100,000 on March 31, compared with $3,211,452 at the beginning of the year. Inventories were little changed from the total of $3,510,661 on December 31, while the ratio of current assets to current liabilities was approximately 13 to 1. Unless unforeseen factors develop to interfere with the normal trend of Raybestos business, it is believed likely that operations in the current quarter will show a satisfactory gain over the first three months of the year.

Two Interesting Papers Scheduled For New York Group Meeting May 20

FINAL announcement of plans for the next meeting of the New York Group of the Rubber Division, American Chemical Society, reveals that two technical papers of more than usual interest will be presented. This meeting will be held on the evening of Wednesday, May 20, at the club rooms of the Building Trades Employers Association, 2 Park Avenue at East 33rd Street, New York City.

F. R. Davis, president of the Davis Emergency Equipment Company, will speak on the use of "Rubber in Safety Appliances." A. R. Kemp, of the Bell Telephone Laboratories, will present a paper on "Rubber in the Telephone Industry." Mr. Kemp was associated with the recent development of Paragutta, a new compound of rubber and purified gutta percha or balata for use in submarine cables.

Comprising a large library, game room, lounge and dining hall, the new meeting place for the New York Group represents a distinct innovation in the type of quarters selected for these sessions. These facilities will be available for use by members of the group prior to the dinner and meeting.

The entertainment program will feature Roscoe M. Gage, well known chemist of the Fisk Rubber Company, in several numbers on the mandolin. "Professor" Baker, popular entertainer, will talk on current topics and will vary his talk with a few feats of magic.

Dinner tickets will be $2.50 and may be obtained from the secretary-treasurer of the group, J. P. Coe, Naugatuck Chemical Company, 1790 Broadway, New York City.

Cleveland Banks Replace Cyrus S. Eaton In Control of Continental Shares, Inc.

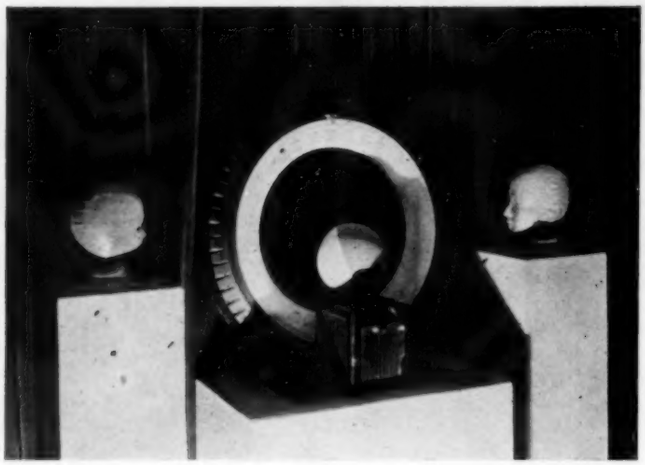
CONTROL of Continental Shares, Inc., the largest investment trust with important holdings of rubber company securities, passed late last month from the hands of Cyrus S. Eaton to the four largest banks in Cleveland. Mr. Eaton resigned as chairman and director of the organization, and three of his close associates also resigned from the board of directors.

W. R. Burwell, president of Continental Shares, Inc., also resigned his post. Mr. Burwell was elected a director of the Goodyear Tire & Rubber Company last year, his election being construed as being for the purpose of giving the Eaton interests representation on the Goodyear board.

Under the new setup, George T. Bishop succeeds Mr. Burwell as president of Continental Shares, Inc. Mr. Bishop, a director of the Seiberling Rubber Company, was until recently retired from active industry, but has had a business experience of 40 years with railroads, public utilities and manufacturing companies. He is a former chairman of the Niagara, Lockport & Ontario Power Company and of the United Gas & Electric Company. He was also president of the Frontier Corp., a post in which he was associated with General Electric, du Pont and Aluminum Company of America (Mellon) interests.

At the time Continental Shares, Inc., was admitted to trading on the New York Stock Exchange in January, 1930, it was revealed that 10 per cent of its $130,000,000 capital was invested in the "Big Four" rubber companies and in Goodyear Shares, Inc., a holding company for stocks of the Goodyear Tire & Rubber Company.

(Other news of the industry will be found on Pages 129-135)



Tire by General; Bathing Caps, Ball, Battery Box and Radio Panel by Goodrich

ART *in Relation to* the Rubber Industry

By THEODORE H. POND
Director, Akron Art Institute

THE exhibition of art in rubber now on view in the galleries of the Akron Art Institute at Akron, Ohio, is significant in two ways—it is, so far as we know, the first exhibit of its kind ever attempted in the United States and it is strongly indicative of the trends in the rubber industry as a whole and of the potential possibilities of this most modern of materials as a medium for artistic expression.

In other words this exhibition clearly shows that the rubber industry is at least partly aware of the fact that it must in the future rely less upon the demand for tires and more upon a more or less stimulated demand for other things made of rubber in order to keep its factories in efficient operation. This consciousness of a need for other outlets for rubber has naturally resulted in an effort to increase the sale of such things as have long been made of rubber through an improvement in their usability and also in their shape, color and decoration. It shows that the rubber industry is becoming "art-minded." In fact, beauty in rubber goods is not something to hope for, but the exhibit proves that it is already realized in many cases.

The present exhibition, while far from complete, is yet sufficiently comprehensive to show clearly what has been accomplished so far in the way of stimulating the consumption of well-known articles made of rubber through improvements in their design and decoration. But while successful in this particular it fails to suggest except in a negative way the tremendous possibilities of rubber as a medium for creative expression.

It is conceivable that a lady's over-shoe or bathing cap or even a hot water bottle may be a thing of beauty as well as a necessary utility. Also we are familiar with the decorative possibilities of rubber for flooring, table tops, show case moldings, radio panels, etc. But what of rubber for mural decoration, pictorial wall mosaics, game boards, rugs, curtains, furniture and sculpture.

Any one with even a very rudimentary imagination can see that rubber might easily lend itself to any or all of these uses, perhaps better or more cheaply than materials of which they are now made but there is nothing in this exhibit to suggest the probability of any such things.

The possibilities of the inflatable toy alone are prodigious and as yet almost unrealized.

Evidently the rubber industry has arrived at that stage in its evolution when it can no longer rely upon mechanical ingenuity and mass production alone for its life. More and more it must enlist the imagination, creative ability and trained taste of the artist in order to give its wares those desirable qualities which will place it on a competitive basis with the older industries—ceramics, glass, wood,

ART and beauty of design is so seldom associated with the commonplace articles of commerce and trade that it comes somewhat as an agreeable surprise to know that rubber articles of daily use can be manufactured in such artistic form as to win the appreciation of such organizations as the Akron Art Institute. It is also fitting that the first exhibit of artistic rubber products should be inaugurated in Akron, the center of the domestic industry.

While America, which has enjoyed the reputation of producing high quality rubber products, has been slow to give them recognition by featuring displays, exhibits and the like, the European manufacturing countries have taken advantage of every opportunity to show their rubber goods at expositions and merchandising fairs, such as those held periodically at Lyons and Leipzig. The Rubber Growers Association of London has been particularly active in this regard and has exhibited throughout the British Isles on every possible occasion.

Aside from the permanent exhibit now in the National Museum in Washington, which only covers the subject of the manufacture of rubber goods in a general way, the present exhibit at the Akron Art Institute is the first in America to feature the artistic developments in the industry.

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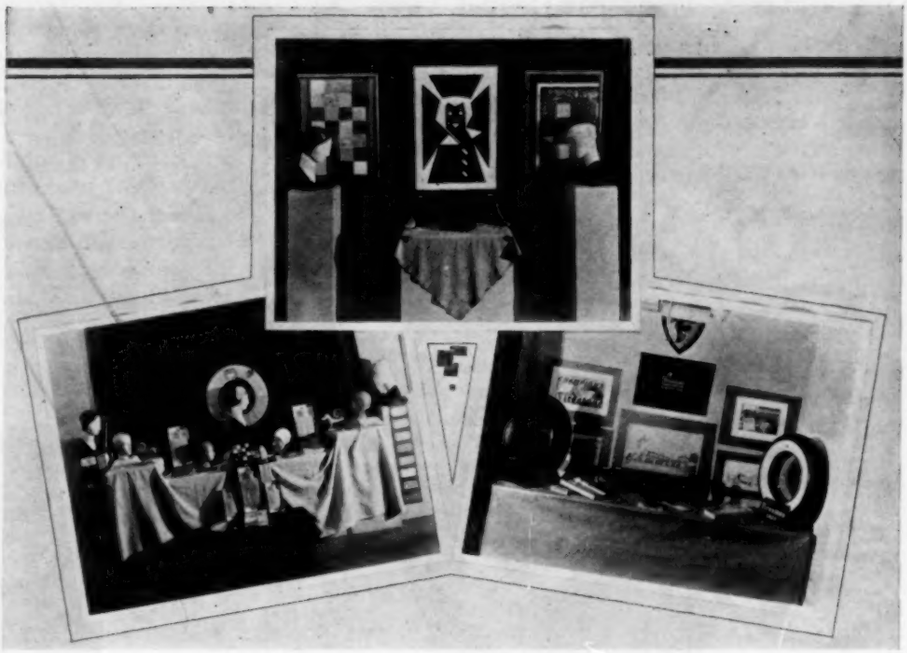
stone and metal—which long ago found out their need for art to give them life.

Art even plays a part in the tire of today. The beauty of its patterned tread and well placed circles and stripes makes for attractiveness as well as for safety and durability.

The contributors to the present exhibition include but a very small number of the producers of goods made of rubber but these are among the largest and best known. They are the Goodyear, Goodrich, Firestone and General. Other companies are also expected to offer exhibits. All these firms are located in Akron and have an international reputation.

Goodyear has limited its exhibition to the flooring it produces and the fine line of informative and advertising material connected with that phase of its production. The product of the General Tire Company is high grade tires exclusively. Their exhibit, therefore, is the finest tire they produce plus examples of the high grade advertising employed in selling it. Firestone also shows two fine tires and some tire advertising but also shows fine ladies' and children's footwear.



Top: Rubber Mosaic and Flooring by Goodyear; Bathing Caps, Battery Cell and Card Table Cover by Goodrich; Overshoes by Firestone.

Left: Bathing Caps, Hot Water Bottle, Flooring, Toys, Garden Hose and Radio Panel by Goodrich.

Right: Signs, Advertising, Drawings, Tires, Overshoes, Boots and Bathing Slippers by Firestone; Battery Cell, Hot Water Bottle and Surgeon's Gloves by Goodrich.

Goodrich has by far the largest and most varied display and one which probably exhibits more conscious effort to give to their product real beauty in design, in form and in color. Their exhibit includes bathing caps and head dresses of more than ordinary interest in design and color, flooring, toys, aprons, hot water bags, radio panels, battery jars, tires and a complete and fine line of advertising matter. Not the least part of this exhibit are the well designed containers, wrappings and labels which show much careful consideration.

Limited in its scope and only partly realizing the hopes of its projector, nevertheless this first exhibit of rubber in an Art Institute has called to the artists attention the many and very important possibilities of rubber. It can be given as much beauty of form as wood or stone or metal, by either casting or carving. It can achieve a limited but beautiful range of color variation and is more adaptable to mosaic than either stone, glass or clay. It can acquire legitimately any texture from the hard mirror like surface of glass or the dull gloss of ivory to the iridescent sheen of fine silk or soft spongy surface of fine leather.

Any material which offers such a wide range of possibilities is one that should intrigue the imagination of the artist and open up new and important fields for creative expression.

All that is needed is that the rubber industry give art the same opportunity that the textile, metal and ceramic industries have given it to prove the great aesthetic possibilities inherent in this most typical material of our times. Art in rubber will add to the joys of home life what rubber tires have added to the joy of travel.

Exports of Truck and Bus Casings from the United States in 1930

SEVERAL factors have combined to increase the importance of trade in pneumatic tires for motor trucks and busses, according to the Department of Commerce. The change-over from solids to pneumatics gives a longer operating life to motor vehicles of these types and increases the riding comfort of motor-bus passengers, while reducing the damage to roadbed caused by heavy vehicles. The increased speed of operation of heavy motor vehicles equipped with pneumatics has contributed to their greatly increased use in recent years, and the registrations in this field have increased much more rapidly than those of passenger automobiles, both in the United States and abroad.

The growing importance of exports of truck and bus casings led to the provision of statistics of United States export statistics for this class of goods in January, 1929. The statistics for 1929 covered United States exports of truck and bus casings, sizes over 6 inches only, but during 1930 the classification was broadened to include other sizes of casings for truck and bus service.

Similar statistics of exports are not provided by any foreign government, and the exports from the United States alone are not sufficiently representative to be of much assistance in foreign market analysis, as will appear later.

Through the cooperation of the Rubber Association of Canada, with the Department of Commerce, statistics of the total monthly exports of truck and bus casings from Canada have been made available from January, 1929, to date. Taken in conjunction with the United States export statistics, a more accurate picture of the trend of this trade may be gained than from United States export statistics alone. For example, the exports from the United States to foreign countries increased from 287,052 in 1929 to 475,155 in 1930, while those from Canada, as estimated by the Rubber Association of Canada, declined from 364,867 to 278,267 units in the same period. The total exports to foreign countries increased by 15.8 per cent, from 651,909 in 1929 to 754,402 in 1930, or at a rate much smaller than indicated by United States statistics taken alone.

Triple Tread Air Cooled Tires

ANNOUNCEMENT was recently made by the Seiberling Rubber Company, of the introduction of the Seiberling Triple Tread Air Cooled Tire. The new tire is novel in construction and is a distinct departure from any other pneumatic casing. It actually has three treads, not merely super-imposed one on the other but built

integral into one fused and inseparable unit. These three treads appear successively as the process of wear through service goes on.

The question of heat and inflexibility have been solved in the new tire by a unique air cooled construction. This consists of two rows of transverse holes that pierce the tread. These rows are set one above the other and staggered so as to insure the largest amount of cooling surface. As the tire is flexed in contact with the road, the air in these holes is expelled. Then as the turning of the wheel releases that particular section of the tire from pressure, air rushes into the holes again, literally causing a continuous deflation and inflation. The force of the air automatically expunges all road materials, clay, gravel, sand, etc.

This special construction provides air-cushioned riding comfort and the two successive treads underlying the original surface tread. As in the course of wear, the first tread disappears, the user naturally breaks through into the first row of holes, and eventually into the second. There, each time, he gets his new anti-skid tread, formed by intermediate design and by the hole channels into which

Unique Air-Cooling Construction

wear has carried him. Inasmuch as he comes into them gradually and evenly, he at all times has the advantage of one or other of these channeled treads, with their sharp edges contacting the road surface. Thus this air-cooled principle enables the Seiberling Triple Tread tire to deliver anti-skid mileage to the last mile of its life.

Rubber at the Chemical Exposition

RUBBER played an important part in many of the individual exhibits at the Thirteenth Exposition of Chemical Industries, held at the Grand Central Palace, New York City, the week of May 4-9. From the standpoint of the number of exhibitors and crowd in attendance it was the most successful exposition so far held.

Seven rubber companies had individual booths, all of them featuring in particular their various processes for anti-corrosive and acid-resisting linings on various types of industrial equipment and machinery. The many articles displayed served to show the wide and increasing use of rubber for industrial uses.

The rubber companies exhibiting were as follows:

AMERICAN HARD RUBBER COMPANY, New York City.—Displayed a wide variety of rubber lined pipes, joints, gate valves and pumps. Featured their 'Ace' rubber protective coatings and linings and displayed rubber-lined tanks and piping in operation with acid solutions. Showed many miscellaneous rubber coated articles for various uses, such as buckets, perforated plates, etc.

B. F. GOODRICH COMPANY, Akron, O.—Showed many examples of their Vulcalock process of lining or coating with rubber and examples of Triflex linings, a combination of soft and hard rubber plies. Cutless bearings, "Acidsealed" enameled goods, a brick insulated Vulcalock tank, a rubber lined fan and rubber lined pickling tank were also shown.

HITCHCOCK COMPANY, Norfolk Downs, Mass. — Featured "Colvulc," a new plastic rubber compound, to be applied as a rubber coating. It is applied and cured cold and can be used for surfacing wood, cement, metal, fabrics or other rubber goods, such as worn conveyor belts. "Colvulc" comes in cans and has the consistency of soft putty.

MILLER RUBBER PRODUCTS COMPANY, Akron, O.—Stressed their Anode process for coating articles with rubber. Exhibited many varieties of rubber covered piping, wire mesh articles, acid proof gloves, lamp guards, plating racks and dipping buckets.

LUZERNE RUBBER COMPANY, Trenton, N. J.—Featured hard rubber articles of every description, both in high gloss or dull finish, including bowling balls, electrical fixtures, toilet seats and piping and tubing in various sizes.

UNITED STATES RUBBER COMPANY, New York City.—Displayed their protective rubber linings and coatings on metal and wooden tanks, flexible pipe and a variety of industrial equipment. A "Rainbow" endless printing and coating blanket was also shown, together with rubber covered rolls, hard rubber battery boxes, automobile steering wheels and a wide variety of rubber rods and bars and other molded goods.

WILKINSON PROCESS RUBBER SALES CORPORATION, Chicago, Ill.—Featured their Linatex rubber lining on tanks, piping, valves and displayed it in sheet form.

The Chemical Warfare Service of the United States Army also had an interesting exhibit in which it featured the latest developments in gas masks, made of rubber coated fabric and with a rubber respirator tube going from the mouth-piece to the canister.

EDITOR'S NOTE.—The above describes only the exhibits displayed by rubber manufacturing companies. A complete report on the exhibits of the chemical and machinery companies who are suppliers to the rubber industry will be published in THE RUBBER AGE of May 25, 1931.

A Forecast of FUTURE TIRE DESIGN*

Trend is Toward Larger Balloon Type Casings Similar to the Present Airplane Tire and Mounted on the Hub

MOTOR CAR progress can never be represented by a continuous curve; as a rule, a certain year will show a sharp rise representative of widespread changes, and this will be followed by a "rest" period during which detail improvements are made to consolidate the ground which has been gained. This trend has been particularly noticeable in regard to tire equipment.

During the years immediately following the Armtistice, tires in general were of too small a section for comfort. A small section means that only a moderate volume of air is being used to support the weight, so that a high pressure must be employed to prevent the load from producing undue deflection.

In 1924 the introduction of low-pressure tire aroused widespread interest. The developments in connection with new type of tire occurred rather too rapidly, so that considerable trouble was experienced at the outset not only with the new tires but also with steering designs and springing which had not been altered to cope with the new conditions.

During the past six years low-pressure tires have been greatly improved and have been made in sections of more moderate dimensions than the early balloons. Tire manufacturers do not really get sufficient credit for the way in which they have kept pace with improved car performance and the call for lower inflation pressures, so that, despite much more onerous working conditions, the tires of 1931 give both greater comfort and a longer life than those of 1924.

Rim Diameters Decrease

During this period another development has been taking place (also tending to make tire design more difficult), this being a steady decrease in rim diameter. There are two reasons for this tendency, one being that it enables the engine to turn faster for the same gear ratio and the other that it reduces the overall height of the vehicle. Thus, where 21-in. rims were once popular, we now have 19-in. and 18-in. rims in common use, and several news cars are actually provided with 17-in. rims. The next big development seems likely to consist of an increase in tire section without any further reduction in external diameter. In other words, tires, as we know them today, may become displaced by tires of bigger section fitted to much smaller rims. This may lead to the disappearance of the present-day type of wheel and the use of what would amount to an enlarged hub.

To quote some figures, one may imagine that the now popular 5-in. section tire on a 19-in. rim could be replaced by a tire of 7-in. section on a 15-in. rim, the external diameter being about 29 inches in each case.

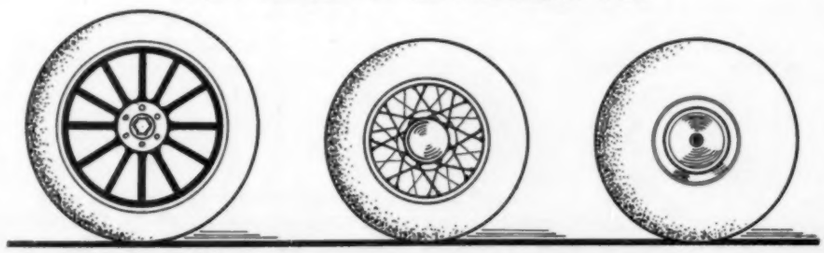
This difference in section may not sound very great, but in actual fact would just about double the volume of air contained in the tube, and it is upon this volume that comfort depends. It is easy to see that for the same external diameter the air-containing volume is roughly proportional to the square of the section size. Hence a section increase in the ratio of 5 to 7 represents a volume increase in the ratio 25 to 49.

The larger tire would naturally be run at a proportionally lower pressure, the increased flexing being allowed by the greater size of the tire. This would involve a bigger area of contact between the tire and the road in order to support the load. For example, if a tire is carrying 900 lb. with an area of contact of 30 sq. ins., the air pressure will have to be roughly 30 lb. per sq. in. in order to support this load, neglecting the comparatively small influence of tire stiffness. If a pressure of only 18 lb. per sq. in. is employed the tire will bulge until the area of contact is increased to about 50 sq. ins., the product of the two being then again equal to the load, viz., 900 lb.

This reasoning shows at once that fatter tires running at lower pressures will inevitably increase rolling resistance and petrol consumption. They may also necessitate further changes in steering gear and front wheel mounting. If the development comes gradually, however, there seems no reason why these technical difficulties should not be satisfactorily overcome.

As regards transverse stability or resistance to rolling, it would seem that a

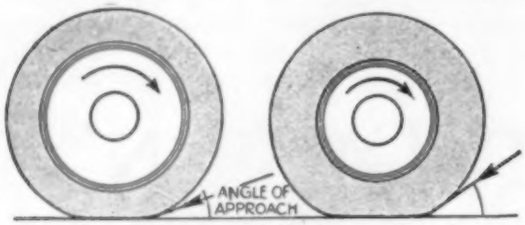
The Evolution of the Pneumatic Tire



Earlier Pneumatic Casing — *Present Type of Balloon Tire* — *Future Tire May Resemble this Type, Mounted on Rim*

*Reprinted from *The Motor*, London.

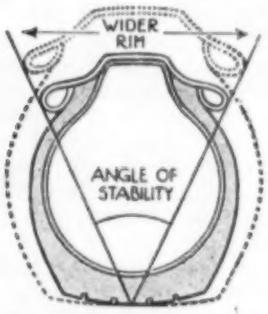
bigger tire can be made just as stable as one of smaller size provided that the width of the rim be increased in order to maintain the same angle of stability as indicated by a drawing reproduced. In the opinion of many authorities it is upon this angle that resistance to rolling sideways mainly depends, so that no insurmountable difficulty is likely to be experienced in this connection.



The lower the pressure the bigger is the angle at which the tread meets the road

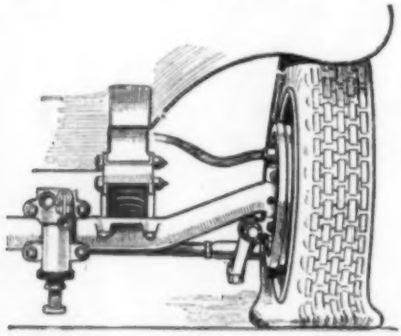
The Question of Punctures

Turning to punctures, experience goes to show that sudden deflation is highly unlikely when a tube contains a very large volume of air at a low pressure. Tires of 10-inch section are already in use on large number of high-speed commercial vehicles and have given no cause for alarm. On the other hand, improved jacking equipment would certainly be called for to cope with the very big lift required when tires of large section are fitted. Four-wheel jacks permanently attached to the axles, which are already making headway, would fully meet this requirement.



To maintain the same angle of stability a tire of bigger section requires a wider rim

One other point worthy of mention is the vexed question of tire noises. The "fat" tire provides comfort in virtue of big air volume and deflection, so that the angle at which the tread hits the road when the tire is rolling in steeper than that of a high-pressure tire. This, together with the bigger area of contact, will undoubtedly tend to make such tires noisier than those of narrow section.



Permanently fitted jacks will become increasingly popular, if tires of very large section are used, to deal with the big drop caused by deflation

In conclusion, it is interesting to point out that there are three lines of defense between the passenger and the road surface, these being the tires, the road springs and the seat cushions. Taking these in reverse order, cushions have reached a stage such that few changes appear probable for some considerable time. Springing improvements are frequently noted, but so far have come to nothing. Increased comfort is therefore most likely to come from the tires, which are, after all, in the best possible position to intercept the shocks which injure passengers and chassis alike.

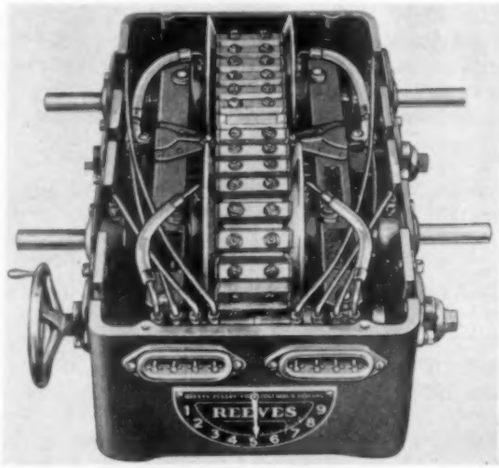
Reeves Speed Transmission

THE new enclosed design variable speed transmission recently announced by Reeves Pulley Company, Columbus, Indiana, embodies radical improvements over previous Reeves enclosed designs.

In the new unit, the standard internal operating parts of the Reeves transmission are totally enclosed in a compact, neat and symmetrical cast iron case. The enclosure meets all modern requirements for attractive lines in industrial equipment and is of practical design and sturdy construction.

Removal of the lid from the cover section permits minor adjustments, inspection of the internal operating parts, or installation of a new V-belt.

Outstanding among the features of the new Reeves enclosed transmission is the improvement of lubrication facilities. Complete lubrication of all bearings is accomplished through force feed fittings, located in two recessed panels at one end of the transmission. From these eight fittings rigid copper tubes lead to the four radial shaft bearings and flexible copper tubes lead to the four thrust bearings fitting around the disc hubs. By means of openings from the thrust bearings, the lubricant is also forced into the spiral grooves of the disc hub bores, thus thoroughly lubricating the disc hubs, shafts and driving keys.



New Reeves Enclosed Design Variable Speed Transmission Unit

The new enclosed design Reeves transmission is built in six sizes, covering requirements from fractional to 10 h.p. in all speed ranges, and can be mounted on floor, ceiling or in vertical position, as the requirements of the installation demand.

A Correction

In the article by D. M. Matthews, appearing in THE RUBBER AGE of April 25, and entitled "What Capital Costs Should Be Incurred In Planting Rubber," the divisions signs (÷) used in the formulae should be read as plus (+) signs.

GUTTA PERCHA *in the Netherlands East Indies**

Wild Gutta Percha Still Gathered by Primitive Methods — Cultivated Gutta Percha Sponsored by Netherlands Government—Preparation of White Gutta Percha for High Grade Golf Balls

THE gutta percha exported from the Netherland East Indies includes wild gutta percha from Sumatra, Borneo and New Guinea, and cultivated gutta percha practically all from Java. During 1930, the exports of wild gutta percha totaled 1,654 metric tons, representing a drop of 38 per cent compared with exports during 1929 and of 55 per cent with exports during 1928. On the other hand, exports of the much more expensive Java estate produced gutta totaled 112 metric tons in 1930, which represented an increase of 39 and 32 per cent compared with exports during 1929 and 1928, respectively. As an indication to the relative value of wild and cultivated gutta percha it may be stated that the average value per metric ton of the wild gutta during 1930 was 443 florins against 4,736 florins for cultivated gutta. (1 florin = $0.40 U. S. currency).

The method of securing wild gutta percha has remained practically unchanged during the past century. The natives penetrate the virgin forests, locate mature and half-mature trees of the *Palaquium* and *Payene* varieties which they cut down. The trunks are then encircled with rings, causing the latex to flow freely. The latex coagulates very quickly and is then scraped off, kneaded with water and washed so as to remove pieces of wood and bark. A variety of trees—*Payene Leerii*—produces a thin latex which does not readily coagulate. Latex from trees of this variety is collected in hollow bamboo receptacles, then made to curdle over a fire. After coagulation, it is treated in the same manner as the other gutta. The production per tree varies greatly, ranging from 0.5 to 4.5 kilograms.

Measures for Preserving the Trees

Owing to the large demand for gutta percha there was danger of exterminating the trees. The Government of the Netherland East Indies realized this danger and sent an expedition to study the position of future supplies. It was found that the natives had to penetrate into the forests to an ever greater extent, having cut down most of the trees in the easily accessible areas. Apparently, it seemed as if the future supply of wild gutta percha would be jeopardized and a profitable item eventually removed from the Netherland East Indian export trade.

To counteract the inevitable decrease in the supply from the Outer Possessions, the Netherland East Indian Government in 1885 started the cultivation under estate conditions of trees which supply gutta percha.

At Tjipetir, in the Preanger Regencies of West Java, the Government laid out an estate for the systematic cultivation of gutta percha. This estate at the end of 1929 had a total planted area of 1,120 hectares. In addition to this Government estate, there are also two small estates in the East Coast of Sumatra, which together have a total planted area of only 160 hectares.

During 1928 and 1929, most of the cultivated gutta percha was shipped to Amsterdam to be sold by the Factory der Nederlandsche Handel Maatschappij, which acts as the Government's selling agent for gutta percha. This firm is also in a position to sell cultivated gutta percha at its office in Batavia, Java, but up to this time it has not had occasion to do so. During 1930, Great Britain took more than half of the total exports. It is believed that most of this gutta percha was used in the British golf ball industry.

Cultivated Gutta Percha

It is interesting to note that when the estate "Tjipetir" was first begun, it was intended to obtain the latex by tapping the trees. When this method was found unprofitable because of the rapid coagulation of the latex, efforts were made to collect the gutta percha from the leaves. This lead to a complete revolution of the cultural methods, since then low, shrubby growths were aimed at whereas before the idea was to grow high, many branched trees. The leaves were formerly obtained by regular clipping and also by picking. In contrast with tea, however, the oldest leaves were gathered because they were found to contain the highest percentage of gutta percha. At the present time, the collecting of leaves is confined to those which have actually dropped from the plants.

The average annual crop of fresh leaf at "Tjipetir" is reported to be about 4,000 kilos per hectare, from which 2.6 to 2.7 per cent of gutta percha is obtained. From the best parts of the estate about 10,000 kilograms of leaf is harvested. About 90 per cent of the gutta percha contained in the leaf may be recovered by mechanical means. The yield varies with the seasons. It is dependent on the proportion between pruned leaf and picked leaf, on the periods of growth and especially on the moisture standard of the leaf.

In spite of the fact that the market for gutta percha is still fairly good, the Government authorities in charge of the operations at Tjipetir decided that they would direct their investigations to finding new uses for gutta percha. Accordingly, a specially refined white gutta percha was produced in September, 1928, which has already found a ready market, especially in the golf ball industry. In this connection, it is interesting to note what the Netherland East Indian authorities have to say about the preparation of this white gutta percha and the prospects of using it for golf balls:

"The yellow, disintegrated gutta percha flakes, obtained

*Abstract from recent Bulletin of the Rubber Division, U. S. Department of Commerce.

in the regular mechanical process, are cooled in a barrel with a sieve bottom through which cold gasoline is pressed several times. A large part of the resinous material and leaf dyes dissolves in the cold gasoline and is carried off. On the other hand, the gutta-carburetted hydrogen is not affected. The latter is then removed to another tank and warm gasoline is poured over it in which the carburetted hydrogen does dissolve. Because only the exterior dyes and the resins are removed by this extraction, the extraction with cold gasoline is not complete and the fluid which is obtained after the warm gasoline has been added is therefore always colored greenish-yellow. With the view to removing the undissolved parts of dirt, the solution is removed to the sedimentation tanks, filtered and then treated with bleaching earth which removes the last traces of the dyes. In order to remove the floating parts of bleaching earth, the fluid is again left to settle, then filtered and chilled.

"The gutta percha carburetted hydrogen which is not soluble in cold gasoline then settles as a completely white, snowy, granular mass. The resins, which have not yet been removed during the cold preliminary extraction, remains largely in the solution. By washing the precipitate with cold gasoline, the last traces of the resin are removed. To remove the gasoline, the gutta percha is treated with steam and the plastic mass is then keaded more or less on the rollers and if necessary mixed with other materials and finally drawn into sheets or pressed into cubes as desired by the consumers."

White Gutta Percha Used for Golf Balls

The white gutta percha which has been purified in this way consists of practically pure gutta-carburetted hydrogen with an average of only from 0.5 to 0.7 per cent of impurity and never more than 1 per cent of resin. A small amount of moisture is also present which is not considered an impurity. It is entirely white and keeps this color also after kneading a long time in the rollers when it may get very hot. It differs in this respect from the purified balata which is being manufactured in a primitive way by the golf ball manufacturers from crude balata by extraction and which has been used up till now for the manufacture of golf balls.

In addition to golf balls, white gutta percha is also being used for driving belts instead of balata. For the insulation of cables it has special advantages. Small amounts of it are used in the manufacture of gutta percha paper.

General Streamline Airplane Tires

STRIKING out in an entirely new path, the new General Streamline airplane tire is a distinct departure from any other airplane tire. It has been developed by the General Tire and Rubber Company and will be in production soon. It was shown for the first time at the Detroit Air Show which opened in Detroit on April 11.

Parabolic in shape, with the narrowest part of the tire at the tread, it cuts through the air and reduces to a minimum heretofore unobtainable the resistance from the wind or, as engineers term it, parasitic drag on the plane in flight.

Development of this radically new type of airplane tire has been going on for more than a year and, at every step in its development, it has been subjected to severe tests.

Aero-dynamic tests of every kind, including wind tunnel tests, have been made by engineers of the U. S. Air Corps at Wright Field at Dayton, Ohio; by aeronautical experts attached to the Daniel Guggenheim School of Aeronautics at New York University; and by the engineering department of the University of Michigan.

In the General Streamline tire, by changing the shape of the tire and by mounting it so that the changed shape is maintained, it is possible not only to use lower air pressure, —from 10 to 15 pounds, depending on the size of the plane, but the co-efficent of resistance is much less than that of other types of airplane tires, according to Robert Iredell,

Robert Iredell, Chief Engineer of General, with One of the New Streamline Airplane Tires Mounted on a Plane

chief engineer of the General Tire and Rubber Company, who has been in charge of development of the tire.

"Due to the parabolic shape of the cross-section of the General Streamline tire, it has greatly increased stability over other types which cuts down very greatly the possibility of ground-looping," said Mr. Iredell. "This is explained by the well-known fact that the triangle is the only geometric figure that will support itself.

"In a ground-loop on doughnut type tires, the action of the plane is similar to that of an automobile on large tires going around a sharp curve at high speed. The size of the tires permits the car to side-sway, although the tires may not leave the ground. When this happens with a plane, it means that one wing may drop and tip over the plane.

Bead is Mechanically Clamped to Rim

"The wheel upon which the General Streamline tire is mounted is constructed differently from any other kind of airplane wheel. The bead of the tire is mechanically clamped to the rim of the wheel, making it impossible for the tire to pull loose from the wheel under stress.

"The total weight of the tire and wheel, in the intermediate sizes first in production, is much less than that of the high pressure airplane tires of the same size.

"As rapidly as production can be accomplished, the General Streamline tire is to be made in sizes to replace the 4, 5, 6, 8 and 10 inch high pressure airplane tires. Tail wheels in two sizes also will be produced."

Alger G. Maranville, aeronautical engineer of the General Tire and Rubber Company, has been in charge of the designing of the new tire and has been conducting the various tests that have been made.

JAPAN'S 1930 *Trade in* RUBBER GOODS

Exports Decline Six Per Cent—Footwear Trade Increases—Drop in Tire Production But Local Industry is Rapidly Expanding

Centers of the Japanese Rubber Manufacturing Industry—Figures Indicate the Number of Manufacturing Establishments in Each City

JAPANESE exports of rubber goods for 1930 were valued at $7,504,900, a decline of 6 per cent from the $8,001,300 for 1929. Although the trade in itself showed a downward tendency during 1930, its final results were much better than those of some of the other principal exporting countries, according to the Department of Commerce.

The low market price of crude rubber throughout 1930 forced the selling price of the finished product to a low level; consequently, as a rule rather than as exception, volume in many instances did not decline as was true in Japanese rubber footwear. Exports of this class increased from 6,954,288 pairs of 1929 to 8,535,390 in 1930, while in value they decreased from $3,432,125 in 1929 to $3,256,119 in 1930.

Rubber Footwear the Principal Export

Exports of rubber boots and shoes form the leading rubber item on the Japanese export list—now at quite a wide margin over tires. Within the past two years Japanese exports of rubber footwear have given keener competition to the British, Canadian, and United States exporters. Lower wages, closer proximity to the source of supply, and an article cheaply constructed for the requirements of price-buying markets have all made it impossible for other nations to compete on a price basis. As a consequence, rubber-footwear exports from the western countries decreased considerably during the past year in oriental countries. Japan, however, is not only confining exploitations in the East but Japanese-rubber footwear is now sold on the west coast of South America and in Cuba.

Japanese Exports of Rubber Goods

Item	1929 *Quantity*	1929 *Value Yen*[2]	1930 *Quantity*	1930 *Value Yen*[2]
Rubber tires ..... 100 kin[1]	56,377	6,300,669	49,649	5,273,677
Footwear ..... dozen	1,159,048	7,444,957	1,422,565	6,592,668
Rubber toys	.....	2,161,288	.....	2,049,087
Rubber manufactures, n. e. s.	.....	1,449,464	.....	1,279,827
Total	.....	17,356,378	.....	15,195,259

[1]The kin equals 1.3228 pounds.

[2]The yen, at average rate of exchange, equaled $0.461 in 1929 and $0.494 in 1930.

Production of Tires Also Important

The Japanese rubber industry produces all kinds of tires, but in recent years, owing to the popularity of motor vehicles, the production of automobile casings has become an important phase of the local industry. Production in 1927 is reported to have been 187,818 units, increasing to 306,348 in 1928 and 411,875 in 1929, but declining to 316,000 in 1930.

Production of automobile casings has been effective for some years, almost wholly by the Dunlop Rubber Co., a subsidiary of the British concern. Recently the Yokohama Rubber Goods Manufacturing Co., a subsidiary of the International Goodrich Co., has begun the manufacture of tires. It is understood that this concern will play an important part in the local consumption. Automobile casings in a more or less small way are also produced by several exclusively Japanese-owned companies.

An American assembly plan in Japan has heretofore employed Dunlop tires as its original equipment, but it is the intention of this assembly plant to transfer a large share of its business to the Yokohama company.

Trade in Rubber Tires

Exports of automobile casings increased from an estimated 153,909 units in 1928 to 169,131 in 1929, but declined to 148,947 in 1930.

China during 1930 regained its place as the best market for Japanese tires, which it lost to the Netherland East Indies during 1929, but failed to reach the peak of 1928. The Netherland East Indies was the second most important outlet during the past year, but with a decrease from the trade of 1929. British Malaya, with a decline from 1929, was in third place.

Japan in recent years has been increasing its trade in rubber footwear to such an extent that it is now the world's greatest exporter of this commodity. Exports for 1930 amounted to 8,535,390 pairs, an increase of 23 per cent over those in 1929. The unit value is rather low, averaging about $0.49 per pair in 1929 and $0.38 in 1930. The Japanese official publication does not show the countries of destination, but it is known that large quantities are

being exported to China, British India, and the Philippine Islands.

Japan is also a large exporter of rubber toys and novelties, which find a ready sale in many markets for their low price. Exports increased from a value of $996,354 in 1929 to $1,012,044 in 1930.

The large miscellaneous class, in which is grouped everything besides tires, toys, and footwear, declined from a value of $668,203 in 1929 to $632,107 in 1930.

Decline in Imports

Japan continues to import certain quantities of rubber goods, although the incoming trade is considerably below the outgoing in both volume and value. In 1929 imports were valued at approximately $3,116,600 and in 1930 at $2,414,000, a decline of 22 per cent. The largest class is tires, which amounted to a value of $2,284,422 in 1929 and $1,892,396 in 1930.

Other classes on the import list were semimanufactured rubber, valued at $129,235 in 1929 and $88,276 in 1930; soft rubber manufactures, $514,854 and $372,593, respectively; other rubber manufactures, $38,648 and $16,325;

Japan is one of the United States best markets for rubber products, especially tires. Total rubber-goods exports from the United States to Japan increased from a value of $2,326,157 in 1929 to $2,403,743 in 1930.

Although there was a slight increase in the rubber-footwear class, the most significant advance was in automotive rubber goods, which accounts for around 80 per cent of the total exports to this market.

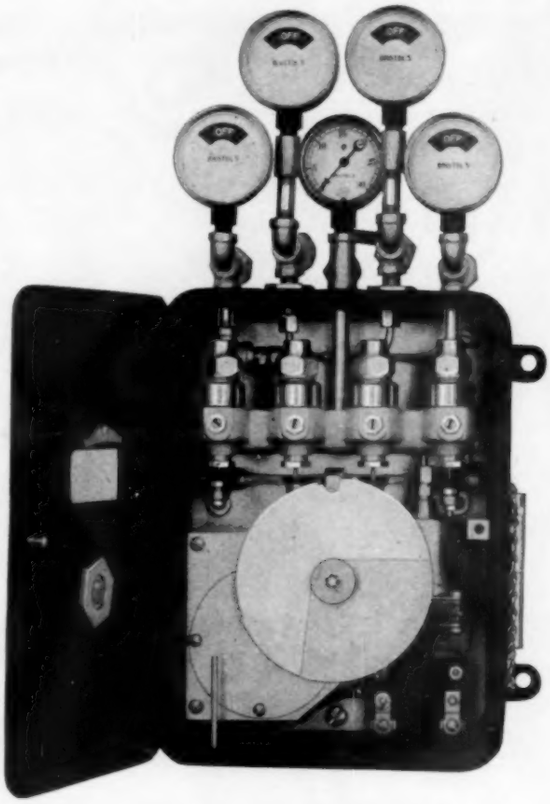
The increase in exports of truck and bus casings was quite outstanding, from 14,461 units in 1929 to 41,916 in 1930. Although the United States exports of rubber footwear to Japan are comparatively small, it is American manufacturers who were able to increase their trade in spite of the growing domestic competition. The increase in exports of bathing caps was outstanding, from a value of $14,606 in 1929 to $20,559 in 1930.

Pneumatic Cycle Controllers

EFFICIENCY of operation and uniformity of product are daily vindicating the use of automatic control of process cycles in the manufacture of articles from rubber, plastics and similar materials. In the operation of presses, heaters, molds and other machines which are required to perform according to a more or less definite sequence, and which can be made subject to the control of valves, it is found that a maximum of simplicity and dependibility, coupled with the lowest cost, is generally to be obtained in the use of diaphragm-operated valves actuated by a pneumatic cycle controller.

A very large proportion of such processes as the curing of rubber products and the molding of plastics are such that the sequence of the several events which terminate the cycle is the reverse of their order at the beginning of the cycle. Where this condition holds, the operation may be controlled by a single-cam instrument, in which a number of pilot valves are actuated in turn by a motor-driven cam. This cam may be made adjustable within certain limits; and speeds are determined by suitable gearing between the synchronous motor and the cam-shaft. The starting and stopping of the motor are usually governed by a pressure-operated switch within the case of the instrument. A single-cam controller, recently announced by the Bristol Company, Waterbury, Conn., is shown in the illustration.

Where utmost flexibility is required, and the different events in the cycle overlap by varying degrees, rendering control by a single cam impracticable, there is available another type of instrument, offered by the same company. In the latter case several individual cams are mounted on a common shaft, and each is adjustable through a wide range, both as regards the duration of its influence in the



cycle and its position in the sequence of events. The pneumatic features of this instrument are identical with those of the single-cam controller.

The instruments described do not perform the function of regulation, but they may be used in conjunction with any of a variety of pneumatic or electrical regulating devices for pressure, temperature, etc., and, with suitable accessory equipment in the form of relay valves, pressure switches, safety stops, etc., they readily lend themselves to those types of control where interlocking or safety stops are necessary.

New Glycol Organics Developed

REZINELS, a group of polymerized terpenes, recently introduced by Glyco Products Company, Bush Terminal, Brooklyn, N. Y., have found two new uses of interest to the rubber trade. The liquid Rezinel No. 2 has been used in conjunction with liquid latex to increase plasticity and adhesion and when vulcanized with sulfur produces a factice-like mass. Rezinel No. 3 is being successfully used with latex to produce a chicle substitute in the manufacture of chewing gum.

The company is also introducing some specialty organic compounds consisting of glycol and glyceryl derivatives of oleic, linoleic, stearic and boric acids. Among these compounds are a number which may be of special interest to the rubber industry such as Copper and Zinc Ammonium Alginate, for use as emulifying agents and in waterproofing; Glycol Oleate and Glyceryl Oleate, as rubber softeners.

Tag Industrial Thermometer

THE C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y., have recently put into production a new industrial thermometer with many important improvements including a new snap case-front.

The glass fronts on industrial thermometers will get dirty and under certain conditions "fog" up. The new TAG snap case-front has been designed to make cleaning easy and at the same time, to make breakage of the easily removable glass front almost impossible. A tongue at the top of the case fits snugly in a groove in the front so that in either opening or closing the front it cannot slip

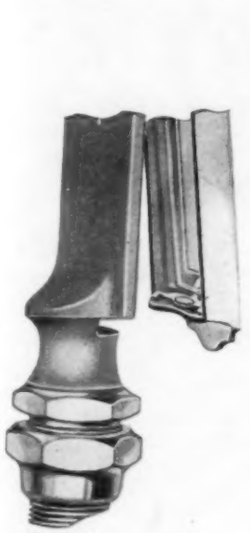


Fig. A

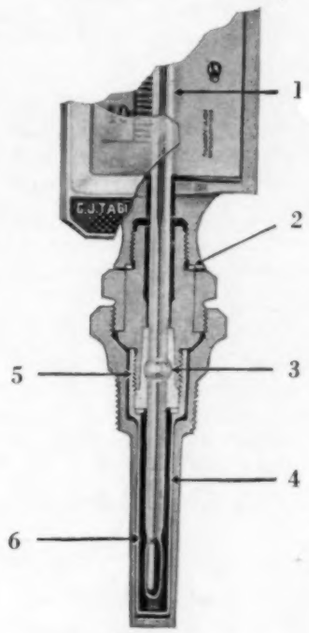


Fig. B

and fall. It takes little effort to remove, clean and replace the new front which, when in position on the instrument, is held firmly closed by the snap device illustrated in Figure A.

Other superior constructional features of this new TAG Industrial Thermometer are clearly shown by Figure B.

1. TAG-Hespe glass easy to read.
2. Connecting piece, locked to case by a specially designed split spring washer.
3. Asbestos packing, uniformly compressed around enlargement on glass stem prevents movement of the tube with reference to scale.
4. The Monel bulb chamber is thin enough to allow quick conductivity, yet rugged and non-corrosive . . . cannot amalgamate with the mercury filling.
5. Left handed thread on bulb chamber prevents loosening if case is turned in removing thermometer from socket.
6. Mercury filling in bulb chamber completely surrounding bulb of thermometer insures transmission of heat with split-second rapidity.

World Tire Trade in 1930

WORLD exports of automobile casings for 1930 were characterized generally by a decline in both volume and value from the high figures realized for several years by all the principal exporting countries. Every major tire exporting country experienced a volume decrease with the exception of the United Kingdom and Germany, according to the Department of Commerce.

Several developments occurred in the tire trade during the year under review, but all were secondary in comparison with the results of the universal economic depression. Competition remained as keen, or perhaps keener, than in former years, but the opposition was chiefly from foreign, rather than domestic sources. Tariff legislation during the year placed a barrier to foreign tire exporters in several markets, but in most instances the measure was for revenue rather than protection—consequently, the obstacle was not so far reaching.

Despite the reduced trade, the United States continues to maintain the supremacy which it has held since 1927 as the world's greatest tire exporting nation. The United Kingdom, by its increased exports during 1930, aided by the decline in Canada's trade, was able to force Canada into third place.

Exports of automobile casings by major countries

Country	1927	1928	1929	1930 [1]
United States	2,811,192	2,692,896	2,979,438	2,684,294
Canada	1,679,126	1,674,553	1,746,950	1,376,048
France	2,111,985	1,812,405	1,478,080	1,169,880
United Kingdom	893,325	880,296	1,282,622	1,385,286
Italy	726,327	791,573	862,982	[2] 646,000
Belgium	345,458	520,283	655,225	578,080
Germany	154,055	180,193	301,339	302,122
Japan	164,969	206,854	227,312	198,927

[1] 1930 figures are preliminary.
[2] Estimated on basis of 11 months' return.

Soviets Dumping Rubber Footwear

THE office of the Commercial Attache in Berlin has been advised by German dealers in rubber footwear that a new and serious competition for American rubber footwear has materialized from the Resino Trust of Moscow. This concern is reported to have a production of 50,000,000 pairs of rubber overshoes per annum and at the recent Berlin shoe exhibition offered rubber footwear at prices from $0.40 to $0.50 per pair in qualities where the American price is around $1.25 per pair.

It is reported in Germany that the Soviets are openly stating that they will quote lower prices than any of their competitors under any and all conditions and are not concerned whether they are selling below cost or not.

Rusting of Oxygen Bombs*

THOSE who have occasion to keep aging bombs in constant use are often annoyed, when they visit the dugout, by the etremely dirty condition of the water in which the bombs are heated. The action of the water on the metal of the bomb seems to be very rapid at the temperature used, 70° C, with the result that not only does the bath quickly become disagreeably dirty and slimy, but the bombs become seriously pitted, a condition not unassociated with danger if permitted to continue. Frequent changing of the water is of little avail, being troublesome and time-consuming; and moreover it does not arrest the gradual corrosion of the bomb.

Various waters in different localities no doubt have different rates of action due to variations in their content of dissolved substances, so that some operators may not be as keenly alive to the condition as others.

Various substances have been tried in solution in the water with the object of stopping the metallic corrosion and preserving the bomb and a number of compounds might be cited, which materially help the condition, but of these, trisodium phosphate has proved to be the most efficacious. It has been found that this salt when dissolved in the water in the proportion of 1% not only keeps the water clean and fresh, but also stops all corrosion of the bomb.

With automatic water feed, the concentration of the alkaline phosphate changes but slightly and its effectiveness continues for months.

If this simple precaution is taken, operators will be agreeably surprised to find their bombs remaining clean and bright and the water free from scum.

*From The Vanderbilt News, February-March, 1931.

EDITORIAL COMMENT

Levelling Off Production

NOW that the pendulum is slowly swinging back to a more healthy industrial condition, it might be opportune to study some of the theories which have been advanced as to preventive measures to ward off other periods of depression.

"Levelling off production," is, in the opinion of William O'Neil, president of the General Tire and Rubber Company, one of the best ways of guarding against such industrial depressions.

Because his company has gone through two severe depressions in the rubber industry without passing a dividend on either class of its stock since the company's organization and because in 1930, it not only paid an extra dividend but established a fund for the welfare of its employees, the industry can we'l afford to take cognizance of his remarks. In a recent statement he made the following observations:

"In times when business is plentiful, manufacturers would do well to guard against adopting new schemes of promotion and selling which temporarily add to the estimate of demand.

"Advertising and selling should be particularly stressed in the direct ratio as sales resistance increases. Out-of-season selling should be stressed more than ever. This will prevent peak capacity, which is really over-capacity, and which causes much trouble.

"It takes labor and material to build a plant; it takes people to make the merchandise and it takes people to handle the merchandise. When an unusually large number of people are employed to handle over capacity, many of them are thrown out of work when conditions return to a normal level.

"A case in point is that of a manufacturer who starts a chain of stores which he owns himself and which replaces only in part the effort of independent merchants. While these stores are being stocked and while boom times are on, there is apparently enough business for both the chain store operator and the independents but the drop in volume of business for both of them is very severe when things return to a normal level.

"New styles and new inventions in every line shou'd be brought out in dull seasons, and not merely made ready for the busy seasons when they come. Special credit terms should be arranged in dull sessions.

"Any business that really attempts to level off the peaks and valleys in its production during the years of heavy demand for merchandise is doing a real service towards avoiding depressions, because it has not employed contractors, labor and machine-labor to erect buildings that will be idle a large part of the year.

"Levelling off production also has a tendency to prevent the creation of false ideas about capacity. It helps to gaining a better understanding of what plant capacity really is.

"The real capacity of a plant is not merely what its machines will turn out but what can be handled in a normal amount of storage space and built from raw materials that can be handled at a reasonable cost.

"Real capacity also is dependent upon the 'space after the machines,' that is the normal facilities for distribution through regular dealer channels which have already been built.

"When dealer channels of distribution are abnormally expanded by unwise extension of credit and by recourse to experimental channels of distribution, it is inevitable that the old-established channels will be interfered with This tends to demoralize the company's established outlets, the effect of which is felt much more keenly when conditions drop back to normal."

Survival of the Fittest

IT WOULD appear from the latest dispatches that all efforts on the part of the Anglo-Dutch interests to bring about some form of restriction have failed. From the standpoint of the producers the situation resolves itself into a case of the "survival of the fittest." In a situation of this kind, however, the plantation industry is bound to suffer at the hands of the native growers. In fact, it is not beyond the realm of possibility that the estates may suddenly awake to find that the native growers have proved the "fittest" in the survival. One of the leading houses in Mincing Lane, in characterizing the situation, makes the following parody on a famous remark of Abraham Lincoln: "All the people can produce rubber some of the time, and some of the people can produce rubber all of the time, but all the people can't produce rubber all the time—unless they wish to plunge headlong into bankruptcy."

The RUBBER AGE

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

CARBON BLACK OUTPUT AT NEW PEAK IN 1930

Carbon black production increased to a new high level in 1930, when the total output amounted to 379,942,000 pounds, an increase over 1929 of 13,500,000 pounds, or 3.7 per cent, according to the Bureau of Mines. This increase, coming after a gain in output in 1929 of 47 per cent, resulted in an oversupply, with the result that stocks continued to mount and prices to fall.

Total sales of carbon black to domestic and foreign buyers in 1930 amounted to 251,539,000 pounds, a decline of 32,267,000 pounds, or 11 per cent, from 1929. Stocks amounted to 259,245,000 pounds on December 31, 1930, or nearly double the total on January 1. The average value per pound, as reported by producers for 1930, was 3.91 cents, the lowest price since the compilation of statistics was begun in 1919.

The average recovery of carbon black per thousand cubic feet of gas burned was 1.43 pounds, the highest recorded. A factor in the gain in average yield in recent years has been the introduction of the retort process by which as much as 10 pounds per 1,000 cubic feet of gas have been obtained. The carbon black output of Texas increased to 72 per cent of the total, with Louisiana showing a corresponding loss.

GOODYEAR MAKING RUBBER CRAWLERS FOR TRACTORS

In cooperation with the patentee, the McNeil Boiler Company of Akron, the Goodyear Tire & Rubber Company is manufacturing rubber crawlers, which are rugged tire bands that fit over two wheels of a tractor providing its own smooth roadway over which the machinery can travel. Positive traction is furnished by means of a series of notches on the inside surface of the band into which the cleats on the wheels fit as they travel around.

The rubber crawlers replace the old steel type crawler used on equipment of this sort, providing not only a higher operating speed for the tractor but also cushioning destructive vibration to a minimum.

Consolidated Laboratories

The Consolidated Rubber Laboratories Company has leased 15,000 square feet of space in the Cleveland Hardware Building, East 45th Street and Lakeside Avenue, Cleveland, O. The space will be used for grinding rubber.

To Sell Dexter Assets

The assets of the Dexter Rubber Corporation will be sold at auction on May 11 at 11:30 A. M. at the factory at Goshen, N. Y. Rubber tape machines, vulcanizers, furniture and fixtures will be offered by the Underwriters Salvage Company of New York, as auctioneer. The Dexter Rubber Corporation was petitioned into bankruptcy early this year.

Form Luxor Rubber Company

Incorporation of the Luxor Rubber Company by Massillon, O., men was announced April 24. Stanley M. Baltzly, J. M. Immler and F. W. Siffert were named as incorporators and Harvey Crow as attorney. The company, it was reported, will manufacture rubber articles and will be located in Barberton, O.

Lee Gets Texas Tire Contract

Award of the Texas state contract for tires for one year, amounting to about $150,000, has been made to the Lee Tire & Rubber Company, subsidiary of the Lee Rubber & Tire Corporation, Conshohocken, Pa. The tires will be received at 18 points over the state and will be used on all state-owned cars and trucks.

Form Two Rubber Companies

The Savoie Rubber Manufacturing Company and the Dorian Rubber Products Corporation, both with offices at 480 Henderson street, Jersey City, N. J., have been incorporated to manufacture rubber tiling, belting, packing, hose and other mechanical rubber goods. The incorporators of the two concerns are Joseph Weitzell, Brooklyn, N. Y., and John M. Mitchell and Philip G. Fritz, Hemstead, N. J.

Eberhard Faber Rubber Exhibit

Under the auspices of the Newark Chamber of Commerce, the Eberhard Faber Pencil Company recently made an exhibit of the products of its rubber factory at the Robert Treat Hotel, Newark, N. J. The Eberhard Faber four-story rubber factory, where the company's erasers and rubber bands are made, was almost entirely remodeled and rebuilt last July. It was originally established in 1858 after Eberhard Faber had established his pencil factory at Brooklyn, N. Y. Carl P. Finck is general manager of the rubber plant, and Hans W. Maucher is in charge of the rubber products exhibit.

STEDFAST RUBBER BUYS CLIFTON FABRIC FIRM

The Stedfast Rubber Company, Inc., Boston, Mass., has taken over the Clifton Manufacturing Company, located in the same city. The Clifton firm is a well known maker of gem duck and backing cloth, in which lines it has specialized for 50 years.

In addition to the Clifton plant, the Stedfast company now operates plants in Mattapan (Boston), North Eaton, Mass., and Granby, Quebec, manufacturing shoe fabrics under the names of Kafsted, Suedsted and Stafast.

M'CLAREN RUBBER BACKS CAMPAIGN IN CAROLINAS

The McClaren Rubber Company, Charlotte, N. C, has inaugurated a sales campaign to further intensify Carolinians' interest in Carolina-made products, according to an announcement by I. Eisbrouch, executive vice-president of the company. In this campaign, the McClaren organization expects to accomplish an increase in sales and operations, to make larger purchases of raw materials and to increase the Carolinians' knowledge of its products.

The McClaren company's officials are making preliminary plans for constructing a new factory at Charlotte about a year hence, and the start of this proposed construction will depend largely on the improvement in the company's business.

Form E. T. Clark Rubber Co.

Authority to incorporate and issue $10,000 in common stock was granted last month to the E. T Clark Rubber Company, Akron, O. The incorporators are E. T. Clark, Blanche A. Dames and Mrs. Ruth D. Cady.

Toledo Rubber to Expand

The Toledo Rubber Products Company, organized last May to manufacture rubber rugs, mats and other rubber products at Toledo, O., is arranging to lease the remainder of the floor space in the building in which it now occupies half the available space. At its annual meeting recently a dividend of $6.50 a share was voted to stockholders. The officers are S. M. Williams, president; E. W. Coble, vice-president; H. J. Johnson, of the Johnson Rubber Company, Middlefield, O., vice-president; E. N. Belnap, treasurer; and W. F. Miller, secretary.

Francis Alonzo Hardy

Francis Alonzo Hardy, one of the pioneer rubber company executives of the country, died at his home at Pasadena, Cal., on April 20. He was 80 years old.

Mr. Hardy joined the Diamond Rubber Company early in 1898, soon after its organization by Ohio C. Barber, head of the Diamond Match Company, and became its president. When the Diamond Rubber Company was taken over by the B. F. Goodrich Company in March, 1912, Mr. Hardy became chairman of the board of directors of the latter organization and served in that capacity until 1917 when the office was temporarily abolished.

Earlier in his career, Mr. Hardy had organized F. A. Hardy & Company, Chicago optical firm, now merged with the American Optical Company. Before he retired in 1921, he was a director of the Bankers National Bank and of the Continental and Commercial Bank of Chicago. He was a director of the Diamond Match Company at the time of his death. Mr. Hardy was also known as a philanthropist, and only recently he completed the writing of a book on economics.

Expand Sylphrap Factory

The Sylvania Industrial Corporation, manufacturer of Sylphrap, transparent cellulose wrapping paper, has started construction work on a $1,000,000 addition to its plant at Fredericksburg, Va., according to an announcement by H. H. Replogle, vice-president of the company. Mr. Replogle was formerly associated with the rubber chemicals sales of E. I. du Pont de Nemours & Company and of the Grasselli Chemical Company.

Pennsylvania Safety Record

The tire department of the Pennsylvania Rubber Company, Jeannette, Pa., went throughout the entire year of 1930 without a lost time accident to any employe. For this record, the factory has been placed on the roll of honor of that state.

Orrsell in Safety Council

The Orrsell Company, Inc., 108 West 78th street, New York City, has just joined the Rubber Section of the National Safety Council. The firm will be represented in Council activities by John R. Foley, president.

Canadian Tire Trade Paper

The first issue of *Tires and Batteries in Canada*, a monthly business paper for the Canadian trade, made its appearance in April. The new magazine is published by Wrigley Publications, Ltd., 110 Church Street, Toronto 2, Ont., publishers of six other papers.

Tire Paper Adopts New Form

Federated Business Publications, Inc., announce that *Tires*, a trade paper for tire retailers, will appear in a new smaller-sized format, starting with the June issue, and will have a controlled circulation of 20,000 as compared to its former 12,000 circulation. The present type page of 7 by 10 inches will be reduced to 5½ by 8 inches.

FIRESTONE INTRODUCES RAPID TIRE CHANGER

The Firestone High Speed Tire Changer makes it easy to take a tire off a drop center rim or put a tire on, according to the Firestone Tire & Rubber Company.

The Changer consists of two spring steel clips joined together by a 9-inch heavy chain. Heavy cadmium plate prevents rusting.

Changing tires on drop center rims is difficult only because the one tire bead will not slide into the bottom of the rim well and allow the other tire bead to be slipped off over the rim.

The Firestone High Speed Tire Changer

snaps over the rim flange and acts as a slide, covering the bead seat of the rim. This then allows the bead to slide easily into the well opposite the point where the bead is being pried over the rim flange with tire tools.

The Firestone High Speed Tire Changer can be used on any car now equipped with drop center rims.

Cutler-Hammer Elects

At the annual meeting of Cutler-Hammer, Inc., Milwaukee, Wis., held April 14, Frank R. Bacon, former chairman of the board, was elected president to succeed the late Beverly L. Worden. The office of chairman of the board was abolished. Other officers elected were F. L. Pierce, J. C. Wilson, vice-presidents; H. F. Vogt, treasurer; W. C. Stevens, secretary.

N. J. Zinc Patent Suit

The New Jersey Zinc Company has filed suit in federal court in New York against James A. Singmaster and the Tubize Chatillon Corporation to compel an assignment of a patent issued August 20, 1929, to Mr. Singmaster for an improvement in artificial silk filaments. The complaint charges that the process was conceived by Mr. Singmaster while in the employ of the New Jersey Zinc Company.

Lea Fabrics in M. E. A.

Lea Fabrics, Inc., Newark, N. J., manufacturer of automobile carpets with rubber binding, has been admitted to membership in the Motor and Equipment Association. Several other manufacturers of rubber automotive products are included in the association's membership.

Dayton Sues L. H. Gilmer

A suit has been brought by the Dayton Rubber Manufacturing Company, Dayton, O., against the Cincinnati Belting Company, Cincinnati, O., and the L. H. Gilmer Company, Philadelphia, Pa., for infringement of a patent on belts. The belts in question are manufactured in large quantities by the plaintiff and are widely used by automobile manufacturers and also for driving machinery in factories. The Dayton company is represented by Toulmin and Toulmin, patent lawyers.

Firestone Preferred Dividend

Directors of the Firestone Tire & Rubber Company on April 25 declared the regular quarterly dividend of $1.50 on the series A cumulative 6 per cent preferred stock, payable June 1 to stockholders of record as of May 15. The company's balance sheet as of October 31, 1930, showed $57,863,300 of this stock outstanding, which would make the quarterly dividend distribution total $867,950.

Hard Rubber Dividend Cut

The American Hard Rubber Company has reduced the quarterly dividend on its common stock to 50 cents a share, putting the shares on a $2 annual basis. The dividend will be paid May 15 to stock of record as of April 30. The previous dividend, paid February 16, was $1 a share. Until the spring of 1930, the company had paid dividends of $1.50 a share quarterly on its common stock.

Rubber Stocks at New Lows

When the entire market dropped to the lowest levels in years at the close of April, rubber company shares were carried down in sympathy. Some improvement has been shown since that time, with some part of the losses being regained. Goodyear was especially weak, making a low of 32⅛, while Goodrich sank to an all-time low of 9. U. S. Rubber was inclined to show more resistance than the other leading rubber company shares, but closed the fortnight with a loss of 1¼ points. Closing stock prices, compared with the close on April 20 and with the high and low for the year, follow:

	Last Price		—1931—	
	May 5	Apr. 20	High	Low
Aetna	—	—	5	3¾
Ajax	—	—	½	⅛
American Hard Rubber	—	—	35¼	30
Dayton "A"	—	—	—	—
Falls	—	—	—	—
Faultless	—	—	37	35
Firestone	—	—	19⅜	16
do. 6% pfd.	—	60	63	56½
Fisk	½	⅝	⅞	½
do. 1st pfd.	—	2	3	2
General	—	—	140	81
do. pfd.	—	—	87½	83
Goodrich	11⅞	13½	20⅞	9
do. pfd.	—	40	68	40
Goodyear	40	42⅝	52⅜	32⅛
do. 1st pfd.	79	82¾	91	72
India	—	13	13½	8⅝
Intercontinental	—	—	4½	2
Kelly-Springfield	2	2	3½	1⅝
do. 6% pfd.	—	—	45	35
Lee	—	—	4⅞	3¼
Mohawk	6	6	8	3
do. pfd.	—	—	35	35
Norwalk	—	1	1½	¼
Pirelli	32⅝	—	39⅞	31⅞
Raybestos-Manhattan	28	—	29½	18⅝
Seiberling	7⅝	—	7⅞	4⅝
do. pfd.	—	—	40	32
U. S. Rubber	14⅝	15⅞	20¾	11⅜
do. pfd.	26½	26¾	36⅛	20¾

U. S. TIRE SERVICE MEN AT DETROIT CONFERENCE

That service is more important now than ever was stressed at the annual conference of tire service field representatives of the United States Rubber Company conducted at the headquarters of the Tire Department in Detroit the week of April 13th.

F. L. Krause, manager of the tire service department, characterized service as the barrage behind the sales forces. "Selling," he said, "must be backed up with service, just as the shock troops in the war were backed up by a barrage. Competition in selling and in quality is keener than ever. Therefore it is necessary that service keep on its toes, backing up the selling efforts of the company 100 per cent."

Dr. Sidney M. Cadwell, director of the product development division, told the field men that the development division was working far ahead in anticipation of future demands, and called for close co-operation to help the engineering department sense the ever changing trends as noted in service.

L. M. Simpson, general sales manager; R. E. Sheahan, manager of automotive sales; H. N. Hawkes, in charge of automobile and truck tire sales; B. J. Lemon, field engineer; A. K. Dill, manager of bicycle tires and sundries sales; M. A. Clark, manager of industrial relations, and E. L. Bryant, general factory manager, were among the speakers.

STANDARDS ASSOCIATION SPECIFICATION ON HOSE

The American Standards Association has approved a revision of the specifications for cotton rubber-lined fire hose which increases the permissible organic acetone extract from 3 per cent to 4 per cent of the rubber compound by weight.

Developments in modern rubber manufacture have brought about the use of various antioxidants and accelerators in rubber compounding for the purpose of insuring longer life and better wearing qualities in finished rubber products. The use of these compounding agents has the effect of increasing the organic acetone extract and the revision which has been approved makes the specifications keep pace with the modernization of rubber manufacture.

These specifications and the new revision were developed under the sponsorship of the American Society for Testing Materials and the Fire Protection Group, composed of the Associated Factory Mutual Fire Insurance Companies, National Board of Fire Underwriters, National Fire Protection Association, and the Underwriters' Laboratories.

M. E. A.-N. S. P. A. Trade Show

The joint trade show of the Motor and Equipment Association and the National Standard Parts Association will be held in Atlantic City, N. J., during the week of December 7. At their conventions in Cleveland last November members of both associations went on record in favor of another joint show for 1931, following the success of the first combined exposition. Neither of the associations has ever held its show in the East previously.

Names in the News

W. W. DRUM, advertising and sales manager of the Samson Tire & Rubber Corporation before its acquisition by the United States Rubber Company, has been named vice-president of Smith & Ferris, advertising agency of Los Angeles, Cal.

PHIL J. KELLY, advertising manager of the B. F. Goodrich Company, spoke before the members of the Cleveland Advertising Club on April 17 at the Hotel Allerton, Cleveland, O. He discussed the "Merchandising Safety" campaign of his company.

C. W. SEIBERLING, vice-president of the Seiberling Rubber Company, addressed the Chamber of Commerce Forum at Steubenville, O., on April 23. He spoke on the advantages of a "community chest."

CHARLES MOORHEAD, manager of the Colombo, Ceylon, branch of the crude rubber department of the Goodyear Tire & Rubber Company, returned to Akron last month for a short vacation.

K. D. SMITH, manager of the tire development department of the B. F. Goodrich Company, spoke on April 16 before a meeting of the company's management group at Polsky's Tea Room in Akron. He told of the progress being made by Goodrich manufacturing units in foreign countries.

R. C. BERKINSHAW has been appointed assistant to the president and acting controller of the Goodyear Tire & Rubber Company of Canada, Ltd., succeeding the late J. G. LANE. Mr. Berkinshaw joined the company in 1920, in charge of the legal department, and was later appointed secretary.

D. F. CRANOR and L. J. VENUTO, of the Binney & Smith Company, New York City, presented a paper and motion picture on "The Manufacture of Carbon Black" at the Detroit Paint Convention at the Masonic Temple, Detroit, Mich., on April 14. This was the same paper which Dr. Cranor presented on April 9 before the Paint and Varnish Superintendents' Club of the Philadelphia District, and the two authors will repeat this paper before several other paint conventions in various cities in the east in coming weeks.

F. W. MILLER, formerly vice-president of Rogers Brown & Crocker Bros., Inc., has been appointed vice-president of the Swann Chemical Company and will have charge of the Cincinnati office of that organization, recently established on the 39th floor of the Carew Tower in that city. He will be in direct charge of the sale of ferro phosphorus, formerly handled by him in his previous connection, and will also take care of sales in the Cincinnati territory of chemicals, abrasives and lampblacks for the several subsidiaries of the Swann Corporation.

SAMUEL F. BROERS, vice-president of the Firestone Tire & Rubber Export Company, spoke before the Akron District Council of the National Association of Purchasing Agents at Akron City Club on April 28. He illustrated his talk with motion pictures taken on his recent trip around the world.

R. D. FRANKLIN, formerly of the B. F. Goodrich Rubber Company mechanical division, has been named successor to W. N. SPRING, resigned, in the Goodrich purchasing department. He will handle purchases of printing, paper, fibre and corrugated shipping containers, fixtures and office supplies.

R. I. WISHNICK, president of Wishnick-Tumpeer, Inc., and its subsidiary companies, the St. Louis Sulphur & Chemical Company and the Century Carbon Company, left New York April 25 on the Ile de France, together with Mrs. Wishnick, for a combined business and pleasure trip through Europe.

CHARLES SCHMIDT, of Harriss & Vose, 60 Beaver Street, New York City, has been admitted to membership on the Rubber Exchange of New York, Inc.

HARVEY S. FIRESTONE, JR., vice-president of the Firestone Tire & Rubber Company, drove the 20,000,000th Ford car before moving picture cameras as a part of special ceremonies held at Akron on April 25. ROBERT MILLER, vice-president of the Goodyear Tire & Rubber Company, and T. A. ASPELL, vice-president of the B. F. Goodrich Company, accompanied him, together with G. LLOYD WEIL, mayor of Akron.

DR. H. N. WHITFORD, manager of the crude rubber department of the Rubber Manufacturers Association, Inc., gave a talk on his recent visit to the rubber growing centres of the Far East before the members of the Rubber Manufacturers' Association of New Jersey on April 14 at Trenton, N. J. A. L. VILES, general manager of the Rubber Manufacturers Association, Inc., also addressed the New Jersey group.

P. J. KELLY, advertising manager, and E. T. MORRIS and GUY GUNDAKER, advertising representatives of the B. F. Goodrich Company, attended the semi-annual meeting of the Association of National Advertisers at Detroit, Mich., on April 27, 28 and 29. Mr. Kelly led a discussion session on April 28.

ALBERTO PIRELLI, head of the Pirelli Rubber Company of Milan, Italy, spoke before the delegates to the sixth congress of the International Chamber of Commerce at Washington, D. C., on May 5. He suggested American reduction of inter-Allied debts and the tariff as a means of increasing European purchasing power and helping business recovery. THOMAS BATA, head of T. & A. Bata, rubber shoe manufacturer of Czechoslovakia, spoke on management on May 6.

Rubber News Around the World

BELGIAN EXPORTS FELL ONLY 1.7% DURING 1930

Belgian exports of rubber products declined from a value of $10,192,200 in 1929 to $10,014,100 in 1930, or by 1.7 per cent. The most direct cause was the drop of 3 per cent in value of automotive rubber goods, which now accounts for more than 85 per cent of the total rubber-goods exports. This decline was offset to a minor extent by an increase of 88 per cent in value of rubber footwear, but as this class comprises only about 4 per cent of the total, the results were not so far reaching. Exports of mechanical rubber goods decreased in value, as did miscellaneous sundries and specialties, but those of semi-manufactured rubber showed a slight advance.

Exports of all kind of tires declined from a value of $8,885,400 in 1929 to $8,628,600 in 1930. Most of this class consists of automobile casings, which in 1930 were valued at $6,687,900. In volume the exports of automobile casings declined from an estimated 655,225 units in 1929 to 578,080 in 1930. Casing exports from Belgium are wholly from the Engelbert works—the principal rubber manufacturer and the only one in the country to produce automobile casings.

France is the chief outlet for Belgian-made tires, taking 205,260 units in 1930, or 36 per cent of the total exports. Germany during the past year supplanted the Netherlands as the second market, receiving 75,430 units, but a decline from 1929.

During 1930 the Englebert concern completed in Germany a factory where tires will be produced for consumption in the German market and perhaps, for export to adjacent countries. The construction and design were done by American engineers and the factory is reputed to be one of the most modern and up-to-date tire factories in the world. At present, although completed, it is not believed that it is in operation, but as it becomes a factor in the German tire consumption, tire exports from Belgium will consequently show some material change.

Belgian exports of rubber footwear in recent years have shown a remarkable increase—from a value of $147,866 in 1929 to $317,400 in 1930. This class does not include canvas rubber-soled shoes, which have shown a large increase in recent years.

Michelin Earned $3,627,000

The Societe Michelin & Cie., leading French tire and rubber goods manufacturer, is reported to have earned 93,000,000 francs, or about $3,627,000, in the year ended December 31, 1930. This compares with Michelin's net profit in 1929 of 118,000,000 francs, or approximately $4,602,000. The company recently placed an issue of 300,000,000 francs of 4½ per cent bonds through the Banque de Paris et des Pays-Bas, thus replacing an earlier loan of 75,000,000 francs at 6 per cent and obtaining funds to modernize its factory.

Canadian Exports Drop Sharply

During the first quarter of 1931, Canadian exports of pneumatic casings numbered 224,898 as compared to 447,286 in the same period of 1930. Exports of inner tubes numbered 185,876 in the first three months of 1931 as compared to 402,297 in the like period of 1930. Canadian exports of rubber boots and shoes in the first quarter of 1931 totaled 235,950 pairs valued at $385,729 and canvas rubber-soled shoes were shipped to the amount of 1,356,874 pairs valued at $880,920. This compares with 313,446 pairs of rubber boots and shoes valued at $529,929 and 2,307,823 pairs of canvas rubber-soled footwear valued at $1,642,038 shipped from Canada in the first three months of 1930.

PROPOSAL TO SUBSIDIZE RUBBER FLOORING PLANT

That members of the Rubber Growers' Association should co-operate to subsidize a factory for the mass production of rubber floor coverings is a proposal put forward in the latest circular of Stanley F. Ward & Company, London brokers. They maintain that with the aid of mass production good quality rubber floorings can be produced to compete with even second and third grade linoleums, whereas at present the cost of rubber flooring is far in excess of first grade linoleum.

Every estate, it is suggested, should put up £1 for each ton of rubber it produced last year, making a fund of $2,500,000 available, which would be adequate for the purpose.

ARGENTINE FIRESTONE PRODUCES FIRST TIRE

The new factory of the Firestone Tire & Rubber Company near Buenos Aires, Argentina, turned out its first tire on April 30, according to a cable received in Akron from John L. Cohill, vice-president and general manager of the plant.

The plant has been constructed and placed in operation in record time. The site, located on a main railroad line a short distance from Buenos Aires on the way to Eccheverrea, was obtained by Harvey S. Firestone, Jr., president of the South American concern, known as "Firestone de la Argentina" only last September. Formal opening of the new plant will take place in the near future.

Upon receipt of word of the completion of the first tire Harvey Firestone, Jr., cabled congratulations to H. H. McGregor, chief engineer at the Argentine plant who had charge of its construction and equipment. McGregor was formerly chief engineer at plant 2 here in Akron.

The South American plant has a capacity of 1,000 tires and 1,000 tubes a day. It is so arranged that raw materials come in one entrance and finished tires, inspected and wrapped, emerge from an exit at the opposite end.

CANADIAN GOODYEAR IS NOW IN STRONG POSITION

The Goodyear Tire & Rubber Company of Canada is in strong financial position, according to a statement to stockholders issued by C. H. Carlisle, president. "October 1 to April 1, the first six months of our fiscal year, have shown a marked decline in sales in the automobile industry," he stated. "The rubber industry over the same period has shown a decline, but not so severe as that of the automobile industry.

"Your company has economized wherever possible. Its accounts receivable are in excellent condition and will show only a slight decrease in percentage of collection, as compared to the same period a year ago. It would appear that we have reached the extreme low level of prices in the rubber industry. Your company has maintained its financial position as of the close of the fiscal year, and has also increased its cash position."

DUNLOP RUBBER COMPANY EARNED $2,635,000 IN 1930

A fall in 1930 profits of more than 35,000,000 is announced by the Dunlop Rubber Company, Ltd., leading British rubber manufacturer with interests throughout the world. Profit for the year ended December 31, 1930, was £541,424, or about $2,635,000, after depreciation, interest and preference dividends of subsidiaries, but before taxes. This compares with profit in 1929 of £1,576,584, or approximately $7,670,000.

There is to be no final distribution on the ordinary shares, leaving the distribution for the year at 6 per cent, as against 15 per cent in 1929. Sir Eric Geddes, chairman, in his report states that the company "felt severely the acute economic depression at the end of the year which prevailed in all markets without exception."

Beharrell Cost Essay Award

The award of £5 offered by Sir George Beharrell for the best essay dealing with the methods of costing in the rubber manufacturing industry has been made to Philip Massingham Harper, of the Willesden Rubber Company, Ltd. Only ten papers were received in the contest, which was conducted under the auspices of the Institution of the Rubber Industry.

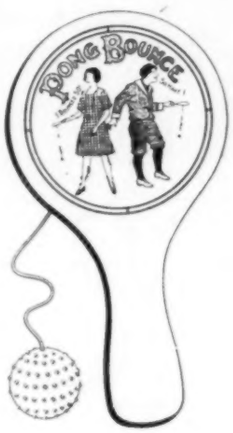
March Golf Ball Imports

Imports of golf balls into the United States during March numbered 113,836 balls, valued at $35,492, the highest figure for such imports since September, 1930. In March, 1930, imports totaled 182,668 balls, worth $58,636. The average unit value per ball in March, 1931, was 31.2 cents as compared to 30.6 cents in February and 24.4 cents in January.

Rubber Goods and Specialties

Pong Bounce

A novelty in toys is offered by the Bugle Toy Manufacturing Company, 62 Hartford Avenue, Providence, R. I., in the Pong Bounce. This consists of an eight-inch paddle with a rubber return ball attached by an elastic string. The paddle bears an attractive picture in colors, and the toy is said to be

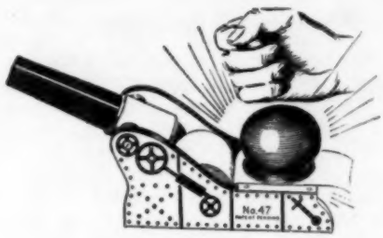


equally appealing to both boys and girls. The company is already finding the item to be one of the best sellers of its line.

Circus Scene Ball

The development of a new process by which pictures may be printed on rubber as successfully as can be done on paper has enabled the Miller Rubber Products Company, Akron, O., to expand its line of play balls

for the surf, pools and the home. One of the features of its 1931 offerings is a ball 14 inches in diameter with circus scenes printed in many colors. The ball is all rubber with a pure rubber bladder and is light in weight and easily inflated. Other new Miller numbers similar to the Circus Scene ball are the company's Map of the World ball and Bathing Scene ball.



Krack-Kannon Noisemaker

Real boys like to make lots of noise, and parents want to please the boys; but they also want to play safe. The new Gibbs Krack-Kannon is designed to fit this need. Loud explosions are made by striking down on a rubber ball with the hand, the air cracking through a paper strip which comes off a roll in the gun carriage. This paper is of newspaper strength, and strips of newspaper are used to replace the original roll when it is used up. Krack-Kannon is made of wood, hand decorated in five bright enamel colors, by the Gibbs Manufacturing Company, Canton, O.

Non-Skid Scratch Pads

There has recently been introduced in England a device known as the "non-skid scratch pad" for use in business offices. The pad has a flexible sheet of fairly heavy rubber as its back, which prevents the paper clipped thereon from slipping over the desk when the writer attempts to take notes with one hand while holding a telephone with the other.

Sherm-Swan Sprinkling Systems

Sherm-Swan portable sprinkling systems, consisting of spray heads produced by the H. B. Sherman Manufacturing Company in combination with all-rubber hose made by the Swan Rubber Company, Bucyrus, O., are now being offered by the Swan Company. The system is placed in an attractive individual package containing four of the spray heads and four sections of hose, three of 13 1/3 ft. each and a 20-ft. section for the silcock connection. The Swan rubber hose is claimed to be made from a compound that will prevent deterioration of rubber under varying climatic conditions.

Goodrich Bathing Cap

Bathing caps for the 1931 season reflect millinery trends in accordance with the current feminine styling of swimming suits.

The new models offered by the B. F. Goodrich Company, Akron, O., follow the new trend and are distinguished by their smart appearance. Approving side brim width is an upturned shape that flares at the side and is rolled back like a Dutch cap. The flat bow in back, shown in the illustration, is designed to conceal any bulky fulness when the hair is tucked under. Other new Goodrich models include an adaptation of the popular beret in an ombre arrangement of three tones and a chic style with upturned brim patterned in contrast and a tailored bow in back.

Goodyear Thor Seamless Transmission Belt

UNDER the name of the Goodyear Thor Seamless Belt, the Goodyear Tire & Rubber Company, Akron, O., has introduced a new belt suitable for all standard requirements in industrial belting. This latest Goodyear development is covered on the edges by a splitless and seamless envelope. The new belt is protected from fraying under constant shifting and from tearing along a seam—all the advantages of "raw-edge" construction plus high durability in a protected edge, according to the manufacturer. The new Goodyear belt is made of strong silver-duck, cushioned and firmly bounn between plies with rubber.

Current Crude Rubber Items

DUTCH GROUP FORMED TO URGE RESTRICTION

At a meeting of Dutch rubber producers held in Amsterdam on April 16, it was decided to form an association for the purpose of promoting a rubber restriction scheme. The association is to officiate for the next five years, according to reports of its plans from the Netherlands capital and includes among its sponsors such well known growers as M. Sanders, J. N. Burger, E. Enthoven and E. H. de Vries.

Later cables stated that there was a lack of unanimity among the Dutch producers concerning the organization of such an association. Producers representing an annual production of about 64,000 tons attended the meeting. Of this representation, producers representing 34,000 tons agreed to the constitution and purpose of the association, while two other producers, representing 15,000 and 12,000 tons, voted against the proposals. American growers and manufacturers went on record as being opposed to the proposal.

Rubber producers and manufacturers who use their output in their own factories and who represent about 2,700 tons abstained from voting.

Exchange Differentials

The adjustment committee of the Rubber Exchange of New York on April 15 fixed the price differentials between the various grades of Hevea plantation rubber which shall prevail on all deliveries against the old "A" contracts for the month of May as follows: off quality first latex crepe at two-tenths of a cent per pound; good F. A. Q. ribbed smoked sheets at twenty-five one-hundredths of a cent per pound; ordinary F. A. Q. ribbed smoked sheets at five-tenths of a cent per pound. The board of governors approved these price differentials at a meeting on April 16.

Malayan Shipments Fall

Exports of crude rubber from the producing countries of Malaya and Ceylon during April underwent the first material decline in months, figures cabled to the Rubber Exchange show. Malaya's gross exports were 43,453 tons, compared with 48,589 tons in March. Those from Ceylon totaled only 3,487 tons, against 6,213 tons for the previous month. Ceylon exported 2,263 tons to the United States, against 4,488 tons in March.

BRITISH MALAYA IMPORTS LESS RUBBER MACHINERY

The depressed state of Malayan trade during 1930 is reflected in the declining values of machinery imports, particularly in connection with equipment for the rubber industry. The effect of the collapse in rubber prices on the machinery trade is apparent in the large drop in imports of rubber mangles and other rubber machines last year.

During 1930, there were imported into British Malaya 125 rubber mangles with a value of $4,835, as compared to 1929 imports of 3,383 mangles, worth $117,579, an actual decline of 96 per cent. Other rubber machines, as classified by the Department of Commerce, totaled 197, valued at $181,293, representing a 25 per cent drop from the 1929 imports of 248 such machines, worth $227,965.

Only one item listed as a rubber machine was imported from the United States last year with a value of $561, whereas in 1929 this country shipped seven items of rubber machinery, worth $43,830, to Malaya. These 1929 imports, however, represented purchases of particularly large plants, not likely to be repeated.

The values mentioned are in Straits dollars, one Straits dollar being equal to $0.56 in United States currency.

RUBBER EXCHANGE CUTS ITS COMMISSION RATES

Effective at the start of business April 21, commission rates and brokerage charges for the purchase or sale of crude rubber futures on the Rubber Exchange of New York, Inc., were returned to a sliding scale basis which, at present market prices, allow a considerable reduction from former rates. Also, the aggregate amount of credit which may be extended by members to their clientele in connection with rubber futures transactions will be increased.

Members of the exchange on April 20, in balloting, approved a charge of $6.25 per contract to members, and of $12.50 per contract to non-members, bought or sold, applying to transactions on either the No. 1 Standard or the new "A" contract basis. These charges will prevail when crude rubber is priced below 10 cents per pound, and scale upward to $12.50 and $25 when the market is 30 cents per pound and above. They also replace a flat rate of $10 and $20 charged previously.

Relative changes in commission rates on complete "straddle" transactions, also became effective.

Approving recommendations made previously by the Board of Governors, the exchange has amended the by-law affecting the extension of credit by members to their customers in relation to the sale or purchase of rubber, and which is generally regarded as more equitable in its provisions. Formerly limited to $1,000. in the aggregate, credit may now be extended to an individual or firm, when responsibility is fully shown, to the maximum amount of $10,000 by the member on futures trading accounts. The extension of such credit, however, must not exceed $250. per contract.

DEALERS' RUBBER STOCKS GAIN IN THE FAR EAST

Dealers' stocks of crude rubber in the Far East amounted to 44,317 tons at the end of March, according to a cable received by the Rubber Exchange of New York, Inc. This total, computed on a dry basis, compares with 42,986 tons at the close of February, and with 39,500 tons at the end of March, 1930.

Before adjustment to a dry basis, the March total was 45,607 tons, of which 26,679 tons are ribbed smoked sheets; 13,659 tons in the form of crepe; 3,284 tons unsmoked sheets, and 1,985 tons of scrap and lump rubber.

Harbor Board stocks are progressively shrinking, amounting to 3,983 tons at Singapore and Penang, against 5,178 tons at the end of February, and with 6,104 tons at the close of January.

Joins Clearing House

The firm of Wachsman & Wassall, 29 Broadway, New York City, was admitted to the Rubber Exchange Clearing House, Inc., effective April 30.

Closing Prices on Rubber Exchange of New York, Inc.

FROM APRIL 20 TO MAY 4, 1931

		Spot	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
Standard Contract of 10 Tons															
Apr.	20	6.00	5.99	6.09	6.18	6.27	6.35	6.45	6.55	6.65	6.74	6.84	6.95	——	102
	21	5.90	5.85	5.93	6.00	6.09	6.18	6.29	6.40	6.50	6.58	6.66	6.75	——	97
	22	6.00	6.02	6.09	6.16	6.25	6.35	6.45	6.55	6.66	6.74	6.85	6.92	——	60
	23	6.00	5.95	6.00	6.05	6.14	6.26	6.35	6.45	6.55	6.64	6.72	6.82	——	77
	24	6.00	5.92	6.06	6.09	6.19	6.29	6.37	6.44	6.52	6.62	6.72	6.83	——	45
	25	6.00	5.95	6.01	6.10	6.20	6.31	6.42	6.52	6.63	6.72	6.81	6.90	——	21
	27	6.00	5.85	5.95	6.05	6.15	6.25	6.35	6.45	6.55	6.66	6.75	6.83	——	35
	28	5.87	5.80	5.87	5.95	6.04	6.14	6.23	6.32	6.41	6.52	6.60	6.68	——	89
	29	5.80	5.78	5.84	5.91	6.00	6.09	6.18	6.27	6.36	6.48	6.55	6.66	——	103
	30	5.82	5.80	5.85	5.90	5.98	6.07	6.17	6.27	6.37	6.46	6.55	6.64	——	162
May	1	6.00	5.90	5.95	6.00	6.06	6.13	6.21	6.31	6.42	6.50	6.58	6.66	6.75	14
	2	6.00	5.90	5.95	6.00	6.06	6.13	6.21	6.31	6.39	6.49	6.57	6.64	6.73	4
	4	6.06	6.09	6.13	6.16	6.20	6.25	6.34	6.43	6.53	6.62	6.70	6.78	6.87	38
Old "A" Contract of 2½ Tons															
Apr.	20	——	5.90	6.00	6.10	6.10	6.20	6.40	6.50	6.60	6.71*	6.81*	6.92*	——	112
	21	——	5.70	5.80	5.90	6.00	6.10	6.20	6.30	6.40	6.55*	6.63*	6.72*	——	233
	22	——	5.90	6.00	6.10	6.10	6.20	6.30	6.40	6.50	6.71*	6.82*	6.89*	——	28
	23	——	5.90	6.00	6.00	6.10	6.20	6.30	6.40	6.50	6.63*	6.71*	6.81*	——	126
	24	——	5.80	5.90	6.00	6.10	6.20	6.30	6.40	6.50	6.59*	6.69*	6.80*	——	73
	25	——	5.90	6.00	6.00	6.10	6.20	6.30	6.40	6.60	6.71*	6.80*	6.89*	——	4
	27	——	5.80	5.90	6.00	6.10	6.20	6.30	6.40	6.50	6.65*	6.74*	6.82*	——	97
	28	——	5.80	5.90	5.90	6.00	6.10	6.20	6.20	6.30	6.51*	6.59*	6.67*	——	18
	29	——	5.70	5.80	5.90	5.90	6.00	6.10	6.20	6.30	6.45*	6.54*	6.63*	——	36
	30	——	5.70	5.80	5.90	5.90	6.00	6.10	6.20	6.30	6.43*	6.52*	6.61*	——	7
May	1	——	5.80	5.90	5.90	6.00	6.10	6.10	6.20	6.30	6.48*	6.56*	6.64*	6.73*	13
	2	——	5.80	5.90	5.90	6.00	6.10	6.10	6.20	6.30	6.47*	6.55*	6.62*	6.71*	——
	4	——	5.90	6.00	6.10	6.10	6.20	6.30	6.40	6.50	6.61*	6.69*	6.77*	6.86*	30

*New "A" Contract.

BALLOON TIRES CAUSE LESS DAMAGE TO ROADS

An increase in the loading permitted vehicles using low-pressure tires may result from recent experiments conducted at the Aberdeen, Md., Proving Grounds on a specially prepared concrete road and at Washington, D. C., according to Burton J. Lemon, field engineer of the United States Rubber Company and a member of the Rubber Manufacturers Association committee, co-operating with the Department of Agricultures Bureau of Public Roads. These tests show that only 15 per cent greater pavement thickness is required to support a 7½-ton balloon-tired truck than for a 7-passenger car, whereas a thickness of slab 31 per cent greater would be necessary for cushion tires and about 42 per cent greater for solid tires.

To test impact, steel obstructions, 200 feet apart, were located on the road at the end of an .8-mile straightaway, secured in place by screws and nuts countersunk in the pavement. The impact reaction after passing over a 1½-inch by 30-inch inclined plane and a 1½-inch by 12-inch rectangular obstruction was decidedly less where single balloon tires were used, with dual balloons second and high-pressure tires the greatest.

Phillips to Sell Lee Tires

The Lee Rubber & Tire Corporation, Conshohocken, Pa., has closed a contract to supply the Phillips Petroleum Company with tires to be sold in the service stations of the latter. Rumors to the effect that the order was for $20,000,000 worth of tires to be delivered over a period of years were denied by A. A. Garthwaite, vice-president of the Lee organization, who stated that the oil company will purchase tires "just as would any other consumer."

India Tire Output Raised

A third production increase of the India Tire & Rubber Company since the first of the year was announced early this month, together with a statement that sales in March exceeded any previous record for that month. The new advance brings the output of the Mogadore plant up to 10,000 tires a week as against a previous factory schedule of 8,500 tires weekly.

Plan Carbon Black Plant

The Luling Oil & Gas Company, Luling, Tex., is planning the construction of a carbon black plant to consume waste gas in Refugio field, which has a 40,000,000 ft. capacity. The company also is making preliminary surveys for a casinghead gasoline plant near Refugio.

Tire Bead Fellowship

Among the 13 new industrial fellowships added to the roll of the Mellon Institute of Industrial Research, Pittsburgh, Pa., during the past fiscal year was one designated as the Tire Bead Fellowship. Under this fellowship, which expires February 1, 1932, H. E. Foote (Ph.D., Brown University) is conducting research having for its objective the improvement of tire bead construction. This work is being supported by the National Standard Company, Niles, Mich.

New General Cable Directors

Three new directors were added to the board of the $63,000,000 General Cable Corporation at the annual meeting March 19 to represent American Smelting & Refining Company interests. F. H. Brownell, first vice-president of American Smelting, was re-elected to the General Cable board. H. Y. Walker, H. M. Brush and H. A. Guess, all vice-presidents of American Smelting, became directors of the cable company.

Sue Rainbow Tire for $77,899

Frank P. Milner and Kate Allen, both of of Columbus, O., filed suit last month against the Rainbow Tire & Rubber Company for $77,899, claimed to be due on promissory notes, and for foreclosure of mortgage. The Rainbow Tire & Rubber Company formerly operated a tire factory at Delaware, O., which is now being used by the Truss Core Tire Company.

Process Golf Ball Moves

The Process Golf Ball Company, Inc., manufacturer of golf balls, moved its plant last month to new and larger quarters at 503 East 72nd Street, New York City. The firm is installing new machinery that will manufacture three grades of new size golf balls and is also adding another automatic painting machine.

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, MAY 5, 1931

RUBBER

Crude

DURING the month of April the average of the daily closing prices for spot ribbed smoked sheets sank to a new low level at 6.43 cents a pound. This compares with the March average of 7.71 cents and the previous low in February of 7.70 cents. The average in April, 1930, was 14.93 cents a pound.

The reduction in Malayan exports and the revival of activity at tire factories were responsible for a fractional rise in the price of crude rubber during the fortnight. London authorities still figure, however, that daily rubber outputs are running 400 to 500 tons above consumptive needs, involving even at present low prices additional daily financing to the extent of $60,000 to $75,000.

A long range transaction of more than ordinary interest came to light April 30 with the information that standard European estate ribs, quantity unannounced, had been purchased for a New York buyer for delivery during January-February-March, 1933, at 3 7/8d per pound. The transaction was closed on the basis of landed terms, London, and worked out at around 7.85 cents a pound in United States currency.

Prices quoted on the New York outside market at the close on May 5 follow:

Plantations—

Ribbed Smoked Sheets—			
Spot-May	.06 1/8	@	.06 1/4
June	—	@	.06 1/4
July-Sept.	.06 3/8	@	.06 1/2
First Latex, crepe spot	.06 1/4	@	.06 3/8
Amber Crepe, No. 2	.05 7/8	@	.06
Amber Crepe, No. 3	—	@	.05 7/8
Amber Crepe, No. 4	—	@	.05 3/4
Brown Crepe, Clean thin	—	@	.05 7/8
Brown Crepe, specky	.05 7/8	@	.06
Liquid Latex, per gal.	.75	@	.85

Paras—

Up-river, fine	.08 1/4	@	.08 3/8
Up-river Medium	Nominal		
Up river Coarse	.04 1/2	@	.06 1/2
Acre Bolivian, fine	.08 1/2	@	.08 3/4
Caucho Ball, Upper	.04	@	.06
Islands, fine	Nominal		

Centrals—

Central scrap	.06	@	—
Esmeraldas	.06	@	—

Balata—

Block, Colombia	Nominal		
Block, Ciudad	.31	@	.31 1/2

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers	
Spot-May	@ 2 7/8d
June	@ 2 15/16d
July-Sept.	@ 3d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers	
Spot	@ 2 1/2d

Scrap

Some quickening in activity was noted during the fortnight by scrap rubber dealers, following the announcements of increased production schedules by tire manufacturing companies. Prices showed a tendency to be more firm this month than they have since the start of the year. Current quotations for the various grades follow:

(Prices to Consumer)

Auto tire peelings	ton	20.00	@	21.50
Mixed auto	ton	9.50	@	10.50
Bicycle tires	ton	7.00	@	8.00
Clean solid truck tires	ton	26.50	@	27.00
Boots and shoes	cwt.	1.10	@	1.20
Arctics, untrimmed	cwt.	.75	@	.80
Inner tubes, No. 1	lb.	.04 1/4	@	.04 1/2
Inner tubes, No. 2, compounded	lb.	.02 1/8	@	.02 1/4
Inner Tubes, Red	lb.	.01 7/8	@	.02
Air Brake Hose	ton	9.00	@	10.00
Rubber Hose	ton	8.50	@	9.00

Reclaimed

Rubber reclaiming plants jumped their own factory outputs upon news of the general increases in tire production in Akron and throughout the country. Sales to rubber manufacturing plants continue to hold up well, with nearly 40 per cent as much reclaim as crude rubber being currently used. Late prices for the different grades follow:

High Tensile

Super-Reclaim Black	lb.	.06 3/4	@	.07
High Tensile Red	lb.	.06 1/2	@	.06 3/4

Shoe

Unwashed	lb.	.05 3/4	@	.06
Washed	lb.	.07 1/2	@	.07 3/4

Tube

No. 1 (Floating)	lb.	.08	@	.08 1/4
No. 2 (Compounded)	lb.	.06 3/4	@	.07

Tires

Black	lb.	.05 1/4	@	.05 1/2
Black, selected tires	lb.	.05 1/2	@	.05 3/4
Dark Gray	lb.	.06 3/4	@	.07
Light Gray	lb.	.07	@	.07 1/4
White	lb.	.07 1/2	@	.07 3/4
Truck, Heavy Gravity	lb.	.06	@	.06 1/4
Truck, Light Gravity	lb.	.06 1/4	@	.06 1/2

Miscellaneous

Mechanical blends	lb.	.04 1/2	@	.05

COTTON and FABRICS

Cotton

DURING the month of April, the average of the daily closing prices for spot middling upland cotton was 10.19 cents a pound, the lowest since December. This compares with an average of 10.90 cents in March and 16.39 cents in April, 1930. The current trend of the commodity has been downward, and the closing spot price on May 5 was 9.70 cents as compared to 10.30 cents on April 20.

Taking the cotton belt as a whole, market authorities find that planting and germination have been retarded by unseasonably low temperatures. Only a moderate amount of replanting has been necessitated to date, however, and a few days of clear warm weather would improve the outlook immeasurably.

The high, low and closing prices for the commodity on the New York Cotton Exchange on May 5 were as follows:

	High	Low May 5	Close May 5	Close Apr. 20
May	9.78	9.58	9.58	10.32
July	10.03	9.77	9.81	10.59
Oct.	10.38	10.13	10.18	10.95

Tire Fabrics

Mills operated by tire manufacturing companies have been busy during the past month, but the outside market shows little change. Prices remain fairly stable, but the demand has not been proportionate with the announced increases in tire output. Late price quotations for the different grades of tire fabrics were as follows:

CORD				
Peeler, carded, 23/4/3	lb.	.34 1/2	@	.34 3/4
Peeler, carded, 23/5/3	lb.	.33	@	.33 1/4
Peeler, carded, 13/3/3	lb.	.30 1/2	@	.30 3/4
Peeler, carded, 15/3/3	lb.	.31	@	.31 1/4
Egyptian, carded, 23/5/3	lb.	.43	@	.43 1/2
Egyptian, combed, 23/5/3	lb.	.47	@	.47 1/2
CHAFERS				
Carded, American, 8 oz.	lb.	.26 1/2	@	.27
Carded, American, 10 oz.	lb.	.26	@	.26 1/2
Carded, American, 12 oz.	lb.	.25 1/2	@	.26 1/4
Carded, American, 14 oz.	lb.	.25	@	.26
LENO BREAKER				
Carded, American, 8 1/4 oz.	lb.	.26	@	.32
Carded, American, 10 1/4 oz.	lb.	.26	@	.32
SQUARE WOVEN				
Carded, American, 17 1/4 oz. 23-11 ply	lb.	.33	@	.33 1/2
Carded, American, 17 1/4 oz. 10-ply	lb.	.25	@	.25 1/2

Sheetings

Practically all sizes of sheetings showed price declines of a quarter of a cent in the course of the fortnight. The current quotations are reported as follows:

40-inch, 2.50-yard	yd.	—	@	.07 1/8
40-inch, 2.85-yard	yd.	—	@	.06
40-inch, 3.15-yard	yd.	—	@	.07 1/2
40-inch, 3.60-yard	yd.	—	@	.06 1/4
40-inch, 3.75-yard	yd.	—	@	.05
40-inch, 4.25-yard	yd.	—	@	.04 5/8

Ducks

More activity has been noted in the market for cotton ducks during the past two weeks, with prices inclining to be weaker. The latest quotations for those grades most used in the rubber industry follow:

Belting and Hose	lb.	.22 1/2	@	.24
Enameling	lb.	.22	@	.22 1/2
Single filling	lb.	—	@	.10
Double filling	lb.	.11	@	.11 1/2

CHEMICALS

THE attention of the industry during the past week has been largely centered upon the Exposition of Chemical Industries at New York. With a majority of the leading chemical suppliers and equipment manufacturers exhibiting, the show was the best of recent years and developed an appreciable amount of business. Rubber factories, meanwhile, have been increasing their production schedules and rubber chemicals and compounding ingredients have been in better demand than for some time.

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.14½@	.16
Captax	lb.		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	— —
Oxynone	lb.	.68 @	.80
Phenex	lb.	.75 @	—
Pipsol	lb.	4.30 @	4.50
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermio F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.21 @	.23
TMTT	lb.	3.00 @	3.25
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.07¾@	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.36
Ultramarine	lb.	.06 @	.32
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½
Reds			
Antimony crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden, 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Maroon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Smith's 444 Crimson f.o.b. Springfield	lb.	.08¾@	.10
Rub-Er-Red, f.o.b. Easton	lb.	.08¾@	—
Venetian red	lb.	.08 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.80
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanium oxide	lb.	.21 @	—
Titanox B, f.o.b. St. Louis,	lb.	.06½@	.07
Titanox C, f.o.b. St. Louis,	lb.	.07 @	.07½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅞@	.06⅞
Horsehead Brand:			
Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅜@	.10⅞
blue label	lb.	.09⅜@	.09⅞
red label	lb.	.08 @	.08½
St. Joe, black label	lb.	.06½@	.07
red label	lb.	.06½@	.07
Zinc Oxide—French Process			
Anaconda, lead free	lb.	.06½@	.07
Anaconda, selected lead free	lb.	.07 @	.07½
White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅜@	.10⅞
Red seal	lb.	.09⅜@	.09⅞
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blacks			
Arrow "Aerofloted"	lb.	.03½@	.08½
Bone Black	lb.	.06 @	.12½
Carbon, compressed	lb.	.03 @	.07
Carbon, uncompressed	lb.	.03 @	.07
Disperso, f.o.b. Louisiana	lb.	.03½@	—
Disperso, f.o.b. Texas	lb.	.036 @	—
Drop Black	lb.	.06 @	.14
Fumonex	lb.	.03½@	.07½
Excello, compressed	lb.	.04 @	.08
Gastex, f.o.b. Texas	lb.	.03 @	.06
Lamp Black	lb.	.10 @	.40
Micronex	lb.	.03½@	.08½
Thermatomic-Thermax	lb.		
Flex	lb.		
P-33	lb.		
United carbon, fob Tex.	lb.	.03½@	.08½
Velvetex carbon	lb.	.03 @	.06
Blanc fixe dry f.o.b. works	ton	75.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, Kaolin, domestic	ton	8.00 @	9.00
Aerfloted, Suprex	ton	8.00 @	20.00
Colloidal	lb.	.05 @	.08
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Mineral Flour, c.l. f.o.b. mine	ton	20.00 @	23.00
Par	ton		
Tensulite		15.00 @	—
Glues, extra white	lb.	.25 @	.26
medium white	lb.	.22 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	— @	2.92
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	— @	1.00
English cliffstone	cwt.	1.75 @	2.00
Quaker	ton		
Superfine	ton	10.00 @	12.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.19 @	.22

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Paradura	ton	62.50 @	65.00
Parmr, solid	ton	28.00 @	48.00
Pioneer, MR, solid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	— @	.31½
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.13 @	.17
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	2.90 @	—
Soda ash, 58% C.L.	cwt.	1.17½@	—
Oils			
Corn, refined, bbls.	lb.	.08¾@	.10½
Cottonseed, crude		.06⅞@	.07
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c.l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.05 @	.06
Niger	lb.	.04½@	.05¼
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.18 @	.23
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.54 @	.55
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	7.00 @	—
Rosin, grade K, 280 lb.	bbl.	— @	6.35
Pigmentar	gal.	.18 @	.23
Tar Retort, 50 gal.	bbl.	13.50 @	15.00
Solvents			
Acetone, pure	lb.	.10 @	.10½
Alcohol, denatured, No. 1 bbls.	gal.	.27 @	.29
Benzol, 90%	gal.	.20 @	.21
Carbon, bisulphide	lb.	.05½@	.06¼
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.30 @	.38
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.54 @	.56
wood	gal.	.51 @	.61
destructively distilled	gal.	.35 @	—
Waxes			
Beeswax, white	lb.	.34 @	.36
Carnauba	lb.	.26 @	.28
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02½@	—
White crude scale 124/126	lb.	.02½@	—
Refined, 125/127	lb.	.03¾@	—
Refined, 128/130	lb.	.03¾@	—
Refined, 135/137	lb.	.05¼@	—
Refined, 138/140	lb.	.07¼@	—

ANTI-OXIDANTS

Agerite, Resin	lb.		
Powder	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Vandex	lb.		

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

FOR the first time in months shipments from the producing countries of Malaya and Ceylon underwent a material decline, figures for April showing a decline of nearly 8,000 tons for the two countries as compared to March. Malaya's gross exports were 43,453 tons, compared with 48,589 tons in March, and those from Ceylon totaled only 3,487 tons as against 6,213 tons for the previous month.

British warehouse stocks again rose to a new peak, the total for London and Liverpool on May 2 being recorded at 138,438 tons. This compares with the figure of 133,841 tons reported as of April 4.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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Meanwhile, the domestic industry appears finally to be enjoying a resumption of activity that is more nearly normal. Several tire factories are running at or near capacity, and sales in many cases are reported as higher than for this time a year ago.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section. The 1930 figures for monthly American consumption and domestic stocks on hand and afloat have been revised in accordance with adjustments just made in the statistics of the Rubber Manufacturers' Association.

U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1928:							
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	67,564	22,872,943	17.74	3,663	1,775,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,386	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,232,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.	38,163	16,192,261	18.94	2,614	1,190,510	20.33	35,549
Nov.	43,507	18,189,305	18.66	2,929	1,300,354	19.82	40,578
Dec.	42,952	17,573,330	18.27	2,745	1,007,279	16.38	40,207
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,653,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,532	14.82	42,735
May	42,692	13,373,232	13.98	3,154	1,085,432	15.37	39,538
June	39,993	12,215,848	13.79	3,174	1,028,653	14.47	36,819
July	35,182	10,553,944	13.39	2,807	759,260	12.08	32,375
Aug.	35,713	9,666,362	12.08	2,357	655,773	12.42	33,356
Sept.	35,380	8,460,812	10.68	1,514	430,772	12.70	33,866
Oct.	46,069	9,893,980	9.59	2,432	419,325	7.70	43,637
Nov.	29,401	5,700,086	8.66	1,300	271,348	9.32	28,101
Dec.	37,300	7,175,242	8.59	2,168	542,197	11.17	35,132
1931:							
Jan.	36,307	7,190,591	8.84	1,706	350,480	9.17	34,601
Feb.	34,005	6,564,969	8.62	1,799	357,078	8.86	32,206
Mar.	40,393	7,356,505	8.13	2,800	534,180	8.52	37,593
Apr.							
May							
June							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1924	1925	1926	1927	1928	1929	1930	1931
Jan.	29,058	29,638	32,196	31,518	34,403	43,002	36,194	28,557
Feb.	25,736	29,761	31,136	30,137	33,702	41,594	32,302	28,797
Mar.	28,385	33,498	32,936	36,141	35,688	44,730	35,450	32,788
Apr.	27,129	34,139	32,696	35,871	32,772	47,521	39,686	.....
May	25,845	35,322	29,364	34,592	37,333	49,233	39,386	.....
June	22,753	35,822	28,598	33,801	37,676	43,227	34,195	.....
July	23,396	36,053	27,577	29,219	37,407	41,526	29,508	.....
Aug.	28,982	35,909	34,533	33,460	42,927	38,274	30,850	.....
Sept.	31,497	31,691	32,904	27,214	39,882	34,707	25,515	.....
Oct.	31,520	29,047	29,836	26,790	40,857	34,800	27,516	.....
Nov.	27,289	28,253	28,080	26,792	37,461	27,659	23,691	.....
Dec.	27,199	28,748	26,293	25,492	31,232	23,531	21,687	.....
Totals	328,769	388,481	366,149	371,027	441,340	469,804	375,980	.....

Figures on Quarterly Basis

Quarter	1923	1924	1925	1926	1927	1928	1929	1930
Jan./Mar.	96,776	87,609	95,263	94,301	99,216	103,558	128,565	101,610
Apr./June	89,493	75,674	104,099	87,109	103,242	103,500	139,292	112,229
July/Sept.	55,621	83,813	99,493	93,793	89,210	117,573	113,746	85,261
Oct./Dec.	63,617	92,656	85,789	83,212	80,860	117,597	84,872	72,029
Totals	305,507	339,752	384,644	358,415	372,528	442,227	466,475	371,120

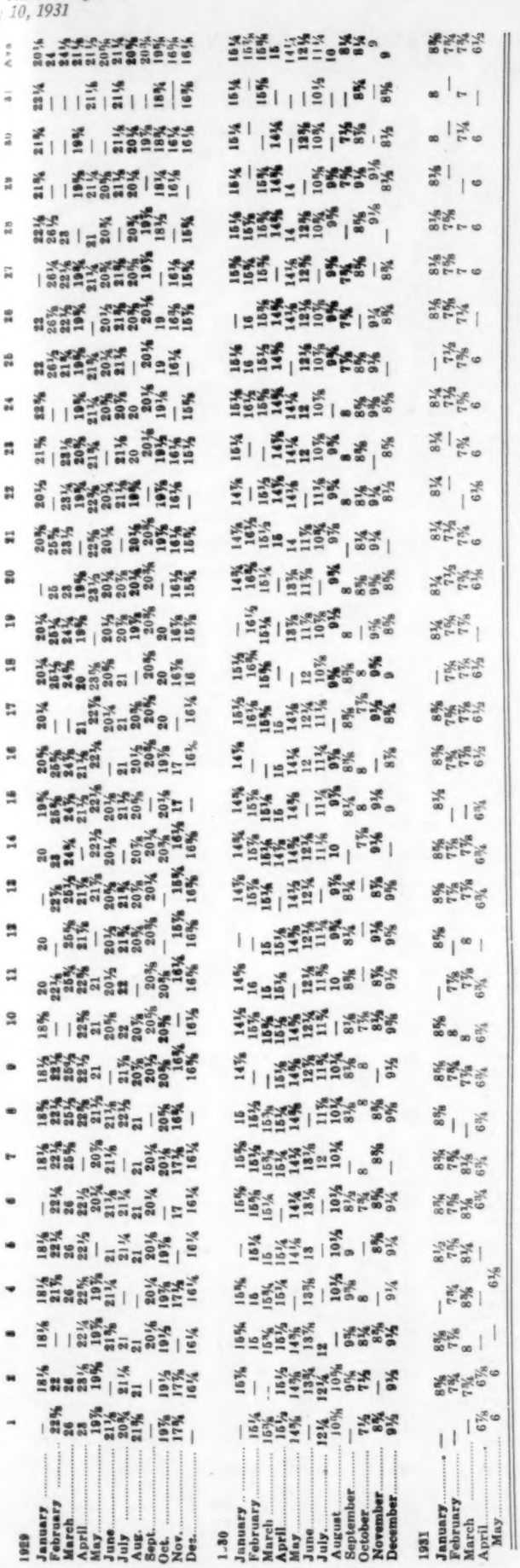
Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1930	1931	MONTHS	1930	1931
January	25,731,000	26,844,000	July	38,256,000	
February	26,509,000	26,133,000	August	37,433,000	
March	31,029,000	31,037,000	September	37,823,000	
April	34,549,000		October	32,267,000	
May	36,497,000		November	30,984,000	
June	35,902,000		December	29,094,000	

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*



Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Month	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14	15.24	8.34
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97	15.85	7.70
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55	15.34	7.71
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18	14.93	6.43
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46	14.24	
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64	12.45	
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30	11.24	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59	9.96	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37	8.28	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67	8.20	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	16.62	9.01	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	16.12	9.05	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	20.55	11.98	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Feb.	Mar.	Apr.	May	Day	Feb.	Mar.	Apr.	May
1	—	—	3¼	2⅞	17	3⅞	3⅞	3⅛	—
2	3⅞	3⅞	3⅞	—	18	3¾	3⅞	3⅛	—
3	3⅞	4⅛	—	—	19	3⅞	3⅞	—	—
4	3⅞	4⅛	—	—	20	3¾	3¾	3	—
5	3¾	4⅛	—	—	21	3¾	3¾	2⅞	—
6	3⅞	4⅛	—	—	22	—	—	2⅞	—
7	3⅞	4	3¼	—	23	3¾	3¾	2⅞	—
8	—	—	3¼	—	24	3⅝	3⅝	2⅞	—
9	3⅞	3⅞	3¼	—	25	3¾	3½	—	—
10	3⅞	3⅞	3¼	—	26	3¾	3½	—	—
11	3⅞	4	3¼	—	27	3⅞	3½	2⅞	—
12	3⅞	4	—	—	28	3⅞	3½	2⅞	—
13	3⅞	4	3¼	—	29	—	—	2⅞	—
14	3⅞	3⅞	3¼	—	30	—	3½	2¾	—
15	—	—	3¼	—	31	—	3⅜	—	—
16	3⅞	3⅞	3¼	—					

Average Monthly Price Per Pound

Month	1929 Pence	1930 Pence	1931 Pence	Month	1929 Pence	1930 Pence	1931 Pence
Jan.	9.942	7.471	4.160	Aug.	10.505	4.880	
Feb.	11.875	7.948	3.823	Sept.	10.160	4.075	
Mar.	12.135	7.595	3.822	Oct.	9.620	4.023	
Apr.	10.490	7.391	3.082	Nov.	8.442	4.440	
May	10.717	6.926		Dec.	7.958	4.516	
June	10.580	6.195		Average for Year	10.291	5.926	
July	11.065	5.648					

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Apr.	May	Day of Month	Apr.	May	Month Day of	Apr.	May
1	10.55	9.50	11	10.30	——	21	10.20	——
2	10.50	——	12	——	——	22	10.05	——
3	——	——	13	10.45	——	23	10.05	——
4	——	——	14	10.30	——	24	10.15	——
5	——	——	15	10.15	——	25	10.10	——
6	10.45	——	16	10.15	——	26	——	——
7	10.30	——	17	10.15	——	27	9.95	——
8	10.15	——	18	10.30	——	28	9.95	——
9	10.20	——	19	——	——	29	9.80	——
10	10.20	——	20	10.30	——	30	9.75	——
						31	——	——

Average Monthly Price Per Pound

	1929 Cents	1930 Cents	1931 Cents		1929 Cents	1930 Cents	1931 Cents
Jan.	20.22	17.21	10.27	Aug.	18.62	12.03	
Feb.	20.21	15.62	10.96	Sept.	18.83	10.85	
Mar.	20.19	15.13	10.90	Oct.	18.46	10.63	
Apr.	20.29	16.39	10.19	Nov.	17.53	10.96	
May	19.41	16.43		Dec.	17.28	10.02	
June	18.74	14.48		Average for Year	19.03	13.57	
July	18.62	13.10					

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1929	ON HAND 1930	ON HAND 1931	AFLOAT 1929	AFLOAT 1930	AFLOAT 1931	ON HAND AND AFLOAT 1929	ON HAND AND AFLOAT 1930	ON HAND AND AFLOAT 1931
Jan.	76,342	121,744	209,487	93,330	61,863	56,187	169,672	193,607	265,674
Feb.	90,058	143,863	212,833	75,790	63,404	63,680	165,848	207,267	276,513
Mar.	100,536	141,843	217,804	67,065	63,646	63,133	167,601	205,489	280,937
Apr.	107,659	148,272	.....	65,793	63,261	.....	173,457	211,533	.....
May	97,192	146,179	.....	65,793	68,168	.....	162,985	214,347	.....
June	92,061	151,551	.....	54,668	58,657	.....	146,729	210,209	.....
July	92,535	152,001	.....	46,145	58,326	.....	138,680	210,327	.....
Aug.	90,769	158,604	.....	49,423	61,168	.....	140,192	219,772	.....
Sept.	84,362	169,927	.....	58,758	60,923	.....	143,120	230,851	.....
Oct.	88,483	185,470	.....	59,180	51,122	.....	147,663	236,593	.....
Nov.	92,219	189,925	.....	62,358	52,538	.....	154,577	242,463	.....
Dec.	118,609	200,998	.....	62,388	56,035	.....	180,997	257,033	.....

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1929	1930	1931	At end of	1929	1930	1931
Jan.	25,191	60,434	81,092	July	30,080	81,048	
Feb.	25,554	64,557	82,265	Aug.	35,605	80,931	
Mar.	28,214	68,923		Sept.	42,188	83,329	
Apr.	31,368	74,676		Oct.	47,803	77,647	
May	31,290	77,312		Nov.	52,454	76,887	
June	31,025	80,260		Dec.	54,304	78,013	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1931					
January	78,042	78,761	79,261	80,194	81,039
February	81,183	81,432	82,111	82,185	
March	83,451	83,001	83,132	83,862	
April	84,339	84,421	85,704	85,922	
May	86,512				

Stocks in Liverpool

1931				
January	41,516	41,814	42,270	42,171	43,463
February	43,293	43,679	44,555	44,776	
March	45,487	47,105	48,333	48,321	
April	49,502	49,733	51,221	52,043	
May	51,926				

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1929	1930	1931	End of	1929	1930	1931
Jan.	29,617	39,727	49,802	July	33,859	45,459	
Feb.	32,373	44,371	49,283	Aug.	30,834	48,132	
Mar.	29,437	45,657	49,590	Sept.	32,138	44,015	
Apr.	26,474	48,473		Oct.	33,770	39,930	
May	30,764	44,715		Nov.	30,963	41,674	
June	30,403	42,451		Dec.	35,548	45,963	

STOCKS IN OTHER CENTRES

1930 End of	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Apr.	29,758	23,580	2,204	4,000	4,482
May	26,482	22,730	2,308	4,000	4,388
June	26,578	20,920	2,316	3,856	4,538
July	28,311	27,290	2,312	4,500	4,665
Aug.	29,482	30,310	2,196	5,200	4,489
Sept.	29,863	31,000	2,343	5,834	4,854
Oct.	28,587	27,630	2,378	5,600	5,156
Nov.	40,551	24,220	2,405	5,400	4,535
Dec.	40,919	25,980	2,569	5,189	5,132
1931:					
Jan.	41,620	24,500	3,168		5,124
Feb.	43,027	24,580	3,326		5,404
Mar.	40,227	25,800		3,857	4,843

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,863,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.8
1926	24,199,524	78.8	1930	17,364,096	80.1
1930			1931		
July	1,449,161	80.7	January	681,301	67.9
August	1,504,187	78.1	February	1,010,774	73.9
September	1,052,109	80.2	March	1,425,336	81.4
October	863,579	73.3	April		
November	920,435	72.2	May		
December	567,355	69.1	June		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1923	1924	1925	1926	1927	1928	1929	1930
Production	45,259	51,633	60,845	61,237	64,439	77,944	68,726	50,965
Shipments	45,204	50,120	59,262	59,002	64,059	74,296	69,395	53,638
Inventory[2]	5,772	7,427	8,142	10,456	10,264	13,624	11,838	9,003

Figures for Recent Months

	PRODUCTION 1929	1930	1931	SHIPMENTS 1929	1930	1931	INVENTORY 1929	1930	1931
Jan.	6,301	4,485	3,675	6,211	4,406	3,744	12,855	11,924	8,957
Feb.	6,479	4,555	3,985	4,951	4,195	3,402	14,525	11,410	9,536
Mar.	7,049	4,863		6,289	4,717		15,329	12,513	
Apr.	7,391	5,648		6,838	5,089		15,870	13,076	
May	7,636	3,717		6,735	5,216		16,733	13,432	
June	6,847	5,122		6,800	5,294		16,497	13,277	
July	6,320	3,991		7,364	5,447		15,034	11,812	
Aug.	5,693	4,166		7,354	5,175		13,337	10,848	
Sept.	4,460	3,365		5,623	4,405		12,070	9,812	
Oct.	4,611	3,582		4,649	3,499		12,042	9,803	
Nov.	3,378	2,654		3,355	2,834		12,127	9,595	
Dec.	3,057	2,814		3,237	3,361		11,838	9,003	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1923	1924	1925	1926	1927	1928	1929	1930
Production	60,116	70,706	82,614	76,618	70,823	80,180	68,829	52,426
Shipments	59,072	68,106	81,004	71,591	72,896	77,127	70,592	54,938
Inventory[2]	8,425	11,052	11,313	16,200	13,692	16,117	12,807	9,999

Figures for Recent Months

	PRODUCTION 1929	1930	1931	SHIPMENTS 1929	1930	1931	INVENTORY 1929	1930	1931
Jan.	6,109	4,607	3,623	6,789	4,857	4,062	14,424	12,704	9,439
Feb.	6,346	4,634	3,916	4,948	4,337	3,400	15,936	13,036	9,921
Mar.	7,000	4,941		6,317	4,727		16,641	13,179	
Apr.	7,157	5,510		6,716	4,848		17,000	13,784	
May	7,181	5,535		6,598	5,074		17,745	13,852	
June	6,542	4,950		6,515	5,265		17,294	13,612	
July	5,793	3,939		7,605	5,855		15,311	11,657	
Aug.	5,481	4,796		7,672	5,762		13,072	10,737	
Sept.	5,190	3,817		5,859	4,541		12,585	10,065	
Oct.	5,000	3,951		4,689	3,472		12,802	10,517	
Nov.	3,544	2,680		3,480	2,788		12,845	10,313	
Dec.	3,484	3,060		3,404	3,412		12,807	9,999	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.	380,011	321,195	58,816	14,523	8,975	5,548	394,534
Nov.	217,570	170,928	46,642	9,424	7,137	2,287	226,994
Dec.	119,950	92,717	27,233	5,495	4,426	1,069	125,445
TOTAL	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930							
Jan.	273,089	235,099	37,990	10,388	8,856	1,532	283,477
Feb.	346,940	297,483	49,457	15,548	13,021	2,527	362,488
March	401,378	336,178	64,200	20,730	17,165	3,565	422,108
April	442,630	375,171	67,459	24,257	20,872	3,385	466,887
May	417,154	362,784	54,370	24,672	21,251	3,421	441,826
June	335,475	289,704	45,771	15,090	12,194	2,896	350,565
July	262,363	222,700	39,663	10,188	8,556	1,632	272,551
Aug.	224,368	187,288	35,758	9,792	6,946	2,846	234,160
Sept.	216,877	175,720	41,157	7,957	5,623	2,334	224,834
Oct.	150,044	112,800	37,244	4,541	3,206	1,335	154,585
Nov.	135,752	102,957	32,795	5,407	3,527	1,880	141,159
Dec.	155,701	124,173	31,528	5,622	4,225	1,397	161,323
Total	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931							
Jan.	171,851	140,267	31,584	6,496	4,552	1,944	178,347
Feb.	219,939	180,419	39,520	9,871	7,529	2,342	229,810
Mar.	276,341	231,245	45,096	12,993	10,483	2,510	289,334
Apr.							
May							
June							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,490	120,626	7,881	25,298	13,797	517,528
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1929:															
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	43,960	15,593	28,367	5,723	800	966	548	453	6,264	6,961	13,437	1,059	1,922	733	67,233
June	40,398	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,693	11,270	757	1,398	548	61,017
July	46,454	15,071	31,383	5,457	974	1,247	641	462	6,422	7,192	13,995	575	1,457	543	70,348
Aug.	50,441	15,469	34,972	6,079	685	993	641	431	4,644	7,298	10,782	1,032	1,563	499	69,619
Sept.	53,484	12,392	41,092	7,993	884	832	640	406	4,708	7,517	10,149	655	1,566	504	76,446
Oct.	47,937	12,516	35,421	8,381	812	1,047	671	485	4,697	8,295	10,512	893	1,606	445	73,265
Nov.	46,279	11,204	35,075	6,660	1,065	668	672	278	4,760	6,711	9,380	771	1,442	535	68,017
Dec.	46,147	15,018	31,129	8,683	900	930	672	320	5,189	8,279	11,102	966	1,674	443	70,287
1930:															
Jan.	52,535	11,773	40,762	7,741	1,560	791	642	386	5,709	7,831	8,928	856	1,837	585	77,628
Feb.	48,947	12,960	35,987	8,055	1,245	847	642	469	6,900	7,191	11,414	944	1,787	480	75,961
Mar.	47,320	12,236	34,084	6,617	1,129	976	642	391	5,796	6,612	11,214	643	1,674	536	70,314
Apr.	43,803	14,627	29,176	4,444	856	1,026	502	366	4,802	6,326	12,724	433	1,201	630	62,486
May	49,016	13,253	35,763	5,968	975	917	502	350	6,352	6,661	12,041	753	1,383	555	72,220
June	36,607	12,120	24,487	4,577	778	1,040	201	392	4,728	4,776	9,512	425	974	551	52,441
July	41,347	12,759	28,588	3,868	792	1,087	600	327	6,022	5,891	9,770	648	810	418	58,821
Aug.	47,802	10,304	37,498	7,077	600	740	600	335	5,892	7,197	9,520	394	809	382	71,134
Sept.	48,529	8,087	40,442	7,966	343	680	600	289	5,960	6,358	7,302	527	1,093	474	72,034
Oct.	47,770	7,312	40,458	7,681	591	598	650	300	5,916	6,956	6,352	667	669	449	71,287
Nov.	41,281	7,774	33,507	6,042	864	631	600*	311	5,334	6,401	8,001	654	658	238	63,241
Dec.	42,086	9,671	32,415	6,934	1,049	976	600*	335	6,254	7,196	8,476	721	1,365	353	66,674
1931:															
Jan.	41,579	11,029	30,554	6,751	1,315	770	600*	424	5,923	7,348	10,328	914	994	350*	66,271*
Feb.	41,951	9,672	32,279	6,345	1,041	945	600*	409	4,869	7,206	9,001	900*	1,271	350*	65,216*
Mar.	48,589	12,009	36,580	6,217		930	600*	536				992	1,338	350*	

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, and 2,670 in 1929. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, and 1,302 tons in 1929. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,399
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,013
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,178
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,808
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,248	4,418	3,178	3,188	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,015
1929:															
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,520	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,478
May	48,475	5,112	3,152	3,682	2,937	2,314	1,417	996	1,437	854	201	468	37	277	71,359
June	38,821	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	520	65,882
July	41,114	4,993	4,839	3,559	3,205	2,388	2,023	1,056	2,918	1,039	258	519	30	465	68,401
Aug.	35,397	14,594	4,645	4,082	2,879	3,663	908	1,234	724	902	254	429	25	319	70,055
Sept.	32,912	17,010	3,889	4,691	1,908	3,511	1,224	1,235	853	672	253	361	91	477	68,453
Oct.	36,040	16,111	4,489	3,855	1,821	3,902	1,838	1,073	1,125	1,147	278	710	91	201	72,181
Nov.	41,097	13,141	3,082	3,776	2,709	3,221	1,275	1,226	1,453	361	253	595	62	313	72,564
Dec.	40,588	12,434	4,274	2,921	2,114	2,251	1,198	1,200	726	741	52	677	90	443	69,709
1930:															
Jan.	44,911	11,106	4,207	3,862	2,842	2,805	910	826	332	612	209	552	200*	577	73,943
Feb.	40,792	10,293	4,482	3,697	2,250	1,386	1,385	2,705	457	1,143	188	315	200*	239	69,533
Mar.	42,216	12,346	4,354	4,289	3,776	2,663	1,088	1,153	975	678	358	322	200*	263	74,676
Apr.	43,036	13,058	5,006	4,488	2,303	2,769	2,067	929	673	1,431	158	461	200*	255	76,790
May	40,012	9,861	5,233	4,379	2,593	2,699	1,279	1,645	64	1,250	230	274	200*	282	65,620
June	37,374	9,645	4,458	3,794	2,579	2,677	1,378	1,574	67	691	343	507	200*	282	65,620
July	32,785	7,650	3,311	3,449	3,347	1,206	587	567	84	939	172	756	200*	342	55,395
Aug.	34,513	8,369	3,953	3,515	2,108	2,170	886	149	265	888	37	747	200*	450	58,256
Sept.	34,373	16,015	5,285	4,089	1,578	2,606	1,279	1,373	414	824	221	817	200*	411	69,481
Oct.	44,385	9,095	7,403	3,747	1,942	3,951	2,460	2,782	609	769	439	1,132	200*	351	79,264
Nov.	28,437	—250	13,662	3,074	2,128	4,003	2,510	2,140	464	596	364	1,180	200*	343	58,851
Dec.	35,202	12,249	7,149	3,105	1,347	4,104	2,815	544	950	814	205	647	200*	673	70,004
1931:															
Jan.	34,892	9,730	5,954	3,847	1,709	2,861	1,036	1,775	601	986	348	464	240	635	65,015
Feb.	32,575	12,226		3,374	1,927					785	157	475	201	366	
Mar.	37,988	12,335											392		

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,372,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,179,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1930	42,681,000	178,059,000	29,514,000	58,465,000
1930:				
March	3,570,000	15,439,000	2,582,000	5,981,000
April	4,029,000	17,762,000	2,593,000	5,989,000
May	3,597,000	15,603,000	1,939,000	6,163,000
June	3,379,000	15,795,000	2,784,000	5,318,000
July	2,940,000	15,117,000	2,663,000	4,910,000
August	3,458,000	13,735,000	1,473,000	4,552,000
September	5,046,000	14,322,000	2,193,000	4,083,000
October	5,209,000	16,460,000	3,056,000	4,186,000
November	2,822,000	11,083,000	1,426,000	3,400,000
December	1,909,000	13,101,000	3,021,000	3,338,000
1931:				
January	2,206,000	12,973,000	2,588,000	3,599,000
February				7,310,000

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	—	—
1920	758	845,985	1,064	1,260,043	5,672	2,068,501	—	—
1921	58	26,945	814	1,077,859	1,745	351,893	—	—
1922	127	57,040	812	978,765	2,335	403,812	—	—
1923	1,155	542,227	700	898,524	4,565	853,308	—	—
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,886
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1930:								
Apr.	75	19,856	58	54,548	410	103,089	226	98,239
May	172	57,760	17	13,645	602	144,415	749	242,385
June	168	51,561	52	47,000	532	120,424	389	129,368
July	93	26,000	24	17,463	45	102,325	242	78,688
Aug.	50	14,000	11	5,600	766	168,511	944	258,127
Sept.	100	28,000	45	39,512	486	86,664	402	127,751
Oct.	64	18,527	36	30,702	490	113,638	306	99,637
Nov.	—	—	73	61,650	389	84,219	332	65,265
Dec.	—	—	90	66,198	429	116,644	70	20,481
1931:								
Jan.	—	—	46	31,870	355	58,897	291	70,708
Feb.	—	—	17	13,801	511	114,100	369	89,470
Mar.	—	—	66	23,568	625	127,803	395	75,285

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

		Consumption					Consumption			
Year	Production	Tons	% to Crude		Stocks*	Year	Production	Tons	% to Crude	Stocks*
1921	36,725	41,251	24.1		.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3		.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7		.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4		.....	1929	218,954	226,588	48.4	27,464
1925	132,930	137,105	35.6		13,202	1930	146,808	155,673	39.6	24,008
1929:										
Jan.	18,685	21,068	49.1		24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,829	47.7		23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,367	46.7		22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,899	22,435	47.3		20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1		19,479	Nov.	14,363	15,330	55.4	26,080
June	18,416	18,141	42.0		17,980	Dec.	13,429	11,531	49.0	27,464
1930:										
Jan.	15,010	17,454	47.6		24,241	July	12,322	12,384	42.3	23,873
Feb.	15,846	14,559	44.5		24,243	Aug.	12,047	10,985	35.9	22,980
Mar.	17,400	15,241	42.2		24,415	Sept.	11,433	10,480	41.4	21,996
Apr.	17,828	16,904	42.0		24,587	Oct.	12,349	10,724	39.3	21,145
May	17,812	17,052	42.7		23,356	Nov.	10,763	8,816	37.5	24,007
June	15,714	14,063	40.8		24,449	Dec.	10,073	8,449	39.3	24,008
1931:										
Jan.	10,349	10,728	37.6		22,429	July	.....	.....	.....	.....
Feb.	10,871	10,800	37.5		18,878	Aug.	.....	.....	.....	.....
Mar.	12,938	12,524	38.3		18,375	Sept.	.....	.....	.....	.....
Apr.	.....	.....	.....		.....	Oct.	.....	.....	.....	.....
May	.....	.....	.....		.....	Nov.	.....	.....	.....	.....
June	.....	.....	.....		.....	Dec.	.....	.....	.....	.....

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.
(Rubber Manufacturers' Association figures raised to 100%)

REVIEW DESK

Books, New Publications, Catalogues, Etc.

EFFECT OF CARBON BLACK ON INSULATING OILS. By W. B. Wiegand, C. R. Boggs and D. W. Kitchin. Published by the Binney & Smith Company, 41 East 42nd Street, New York City. 1931. 12 pp. For free distribution.

Carbon black has been successfully used to improve the electrical properties of insulating oils. The electrical breakdown or dielectric strength of a series of transformer oils was raised by an average of 40 per cent after treatment by various methods with carbon black. A series of experiments designed to illustrate the mechanism of this action of carbon black is described in this paper. This new use for carbon black has no direct bearing on rubber compounding; yet there are references in this paper which ought to be of interest to all those who are following the remarkable strides in the technology of carbon black which have been made during the past few years.

AN ECONOMIC VIEW OF RUBBER PLANTING. By R. Soliva. Published by Kelly & Walsh, Ltd., Singapore, S. S. 1931. 135 pp.

Writing neither as planter nor broker but as a critical well-wisher of the rubber plantation industry, Mr. Soliva, a Singapore banker, points out the defects of restriction schemes and clearly shows that the salvation of rubber growers lies in their own efficient conduct of their industry. He emphasizes that Sumatra is the leading country in cultivation methods, which may explain the strong opposition of some Dutch planters to any governmental interference with their industry. "The policy of the large and well managed companies of Sumatra, which have reinvested their amortization funds in new budded areas," says Mr. Soliva, "will prove extremely wise in the next few years compared with many Malayan estates, which will find themselves with obsolete and nearly valueless estates and little cash to replant them."

WHY RECOGNIZE RUSSIA? By Louis Fischer. Published by Jonathan Cape & Harrison Smith, 139 East 46th Street, New York City. 1931. 289 pp.

Both sides receive a hearing in this presentation of the arguments for and against the recognition of the Soviet government by the United States. After an introductory chapter on the Soviets in world affairs, Mr. Fischer discusses diplomatic relations between the United States and Soviet Russia and outlines the reasons generally put forth for recognition or non-recognition. In later chapters, he treats of Russia's pre-Soviet debts to Americans, the legal aspects of recognition, and the much discussed Communist "propaganda." In his few words on the subject, he gives a truly Muscovite spelling to the word which has been variously used lately as "hondrilla" and "chondrille" by different writers. "Khondrilla," he says, "is expected within a few years to make the Soviets independent of the world rubber market."

PROCEEDINGS OF THE SEVENTH CONFERENCE OF MAJOR INDUSTRIES. Published by the University of Chicago, Chicago, Ill. 1931. 175 pp.

The addresses of eleven leaders of industry at this conference last October are reprinted in this volume, together with more than 50 handsome full-page portraits of the guests of honor and speakers. The discussion of the rubber industry by Harvey S. Firestone, Jr., which is included, was published in THE RUBBER AGE for November 10, 1930.

AMERICAN STANDARDS YEAR BOOK. Published by the American Standards Association, 29 West 39th Street, New York City. 1931. 102 pp.

The progress of standardization is again reviewed in this annual, which includes several projects of interest to the rubber industry. There is a foreword by Charles F. Kettering, president of the General Motors Research Corporation.

IXL HYGRADE WORM GEAR SPEED REDUCERS. Published by the Foote Bros. Gear & Machine Company, 215 North Curtis Street, Chicago, Ill. 1931. 80 pp. For free distribution.

The evolution of worm gearing is described and the application of this type of equipment discussed in this handsomely illustrated publication.

A NEW INDICATING CONTROLLER. Published by the Brown Instrument Company, Wayne and Roberts Avenues, Philadelphia, Pa. 1931. 4 pp. For free distribution.

A new electric pyrometer is described and illustrated in this broadside, with details of its use in several industries.